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Short Communication

Beetroot powder loaded medicated lip balm

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ABSTRACT

The lip care product which we use for everyday purpose contain harmful metals and preservatives. Other than absorbing through the pores on your lips, these harmful chemicals and metals can lead to heart and brain diseases. Butylated compounds are generally used as preservatives in lip balm which can lead to cancer. Which are harmful to lips. Herbal lip balms are commonly used to avoid the problem which arise due to synthetic lip balm. Herbal lip balm is applied on the lips to prevent drying and protect us against the adverse environment. Herbal lip balm protects the lips from drying, chapping, inflammation, sores, cheilitis etc. these side effects can be reduced by using the medicated lip balms. These review article provide us a treatment for lips in the formulation of medicated lip balm. All ingredient used in the formulation are totally herbal and can reduce the chances of having lip disease.

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1. Introduction

Due to the increasing public concern on the synthetic lip balm, new methods are used to produce products using herbal sources. Chapped, dry or cracked lips are very common problem in harsh weather. Due to various side effect of the synthetic preparation present in the market we have come up to formulate an herbal lip-balm having minimal side effects. The beet (*Beta vulgaris*) is a plant in *Chenopodiaceae* family which now belong to *Amaranthaceous* family. The beetroot brings crimson color. Several parts of plant are used as antioxidant, antidepressant, antimicrobial, antifungal, anti-inflammatory, anti-ulcer, diuretics and carminative. The pH of beetroot is alkaline pH 7.5-8.^{1,2} It contains significant amount of vitamin C, vitamin B1, B2, B6, B12. Beet powder is used as coloring agent.^{3,4} Now a days the use of cosmetic products has been increased and the choice of shades, color,

textures, lusters, have been changed and become wider. The lip cosmetics are available in hundreds of colors, shade and texture to satisfy the demand of women. Lip product is often eaten away by the users so it was necessary to have a health regulation over the formulation. The dye that has been used for the color of the preparation of lip balm are dangerous to humans. The toxic chemicals which are used by the industry in preparation of lip balm which are not known to humans such as butylated compounds which are used as antioxidant can cause cancer, endocrine disruption, and organ system toxicity. Paraben used as the preservative can cause rashes, cancer. Fragrance use as fragrant have side effect as hormone disruption, breast cancer. Using these harmful compounds can cause be life threatening. The preparation of lip balm using natural herbal product can minimize the adverse effect of the available synthetic preparation. The present work has convinced us to formulate a herbal lip balm having minimal or no side effects which will extensively use by humans.⁵

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2. Lip Disorder

2.1. Swelling

An allergic reaction can make lips swell. There action may be due to sensitivity to certain food or beverage, drugs, lipstick etc. if we are able to find the cause then it can be eliminated, the lips usually return to normal. But the cause of swelling remains a mystery.⁶



2.3. Cheilitis

With inflammation of lips (cheilitis), the corner of the mouth can cause pain, irritation, crakes, scaly. Cheilitis may be result of deficiency of vitamin B2 in the diet.

3. Sores

A raised area or hard edge on the lips may be a form of lip disorder or virus infection.

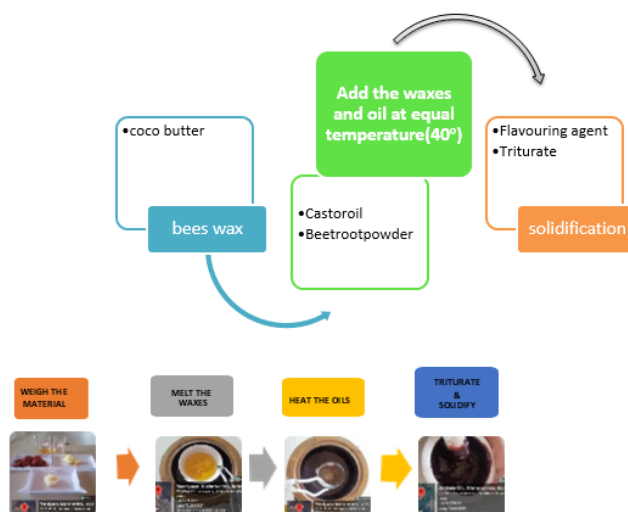


2.2. Sun damage

Sun damage-we can make the lips hard and dry. Sometimes can cause inflammation to lips. Or can darken the lips. This type of damage can be reduced by putting a protective layer of lip balm.

3.1. Crcks:

Lips can get dry and cracked due changes in environment due to dry wind, cold weather, and wind exposure.



5. Ingredients Used in Natural Lip Balm Formulation

6. Mango (Mangifera Indica)

Formulation for 50gm lip balm



3.2. Chapped lips

Chapped lips are caused due to licking of your lips too much. Chapped lips are dry and cracked lips. If your lips burn, sting, or feels uncomfortable they are probably chapped lips.⁷⁻⁹

4. Method of Preparation

All the ingredient were collected in the month of October-November from

6.1. Evaluation parameters of herbal lip balm

It is very important to maintain uniform standard for medicated lip balm, keeping this view in mind the formulated medicated lip balm was evaluated on the parameters such as followed.¹⁰⁻¹²

6.2. Organoleptic character

The color, odor, texture, fragrance, grittiness so medicated lip balm was studied.

Table 1: Ingredients used in natural lip balm)

Component	Roles
Bees Wax (Cera Alba)	Anti-Microbial, Humectant, Enhance Skin Elasticity, Protective Layer on The Lips, Impart Glossiness and Hardness.
Cocoa Butter (Theobroma Cocoa)	Hydrate Skin, Moisturizer, Prevent Drying of Lips.
Castor Oil (Ricinus Communis Linn)	Antioxidant, Emulsifier, Antibacterial, Fight Dry Lips.
Beetroot Powder (Beta Vulgaris)	Brighten Lips, Heal Chapped Lips, Moisturizer, Lighten Lips.
Orange Oil (Citrus Sinensis)	Astringent, Antiseptic, Enrich in Vitamin-C, Anti Inflammatory, Protect from Sunlight.
Strawberry (Fragaria x Ananassa)	Reduce Hyper pigmentation and Dark Spot, Exfoliator, Antioxidant.
Pineapple (Ananas Comosus)	Exfoliate, Anti-Inflammatory, Antimicrobial, Antioxidants, Brightens Lips.
Honey (Apis Mellifera)	Lightens Up the Dark Skin, Humectant, Prevent Pathogen Infection, Moisturizer, Antibacterial, Antifungal, Antiseptic.
Mango (Mangifera Indica)	Antioxidant, reduce sun damage.

Table 2: Formulation for 50gm lip balm

	Formulation1	Formulation2	Formulation3	Formulation4	Formulation5
Flavoring agent	Orange (q.s)	Strawberry (q.s)	Pineapple (q.s)	Honey (q.s)	Mango (q.s)
Beeswax	15	12	12	13	11
Cocabutter	16	18	15	15	15
Castor oil	12	10	12	13	12
Beetroot powder	7	10	11	8	12

Table 3: Results evaluation parameters of herbal lip balm

Characters	F1	F2	F3	F4	F5
Color	Merlot	Merlot	Sangria	Jam	Wine
Texture	Smooth	Smooth	Smooth	Smooth	Smooth
Fragrance	Orange	Strawberry	Pineapple	No	Mango
Grittiness	No grittiness	No grittiness	No grittiness	No grittiness	No grittiness

red	cherry	rose	jam
merlot	garnet	crimson	ruby
scarlet	wine	brick	apple
mahogany	blood	sangria	berry
currant	blush	candy	lipstick

speed the temperature at which the liquid moves along the capillary tube was considered as melting point.

Table 4: Results of melting point)

Formulations	Melting point
1	65-69 ⁰ c
2	72-73 ⁰ c
3	69-70 ⁰ c
4	70-73 ⁰ c
5	65-70 ⁰ c

6.3. Melting point

The melting point of formulated medicated lip balm was determined by capillary tube method, the sample is melted approximately and filled into glass capillary tube open at both end capillary was cooled with ice for two hours and fastened with thermometer. Thermometer with capillary are dipped in water which is placed on heating plate magnetic stirrer. Heating and stirring was started slowly at fixed

6.4. PH

pH of the samples was studied using digital pH meter. The pH of lip balm should lie between 4- 6.5

6.5. Skin irritation

The skin irritation test was performed by applying medicated lip balm on skin for 15 minutes.

Table 5: Results of pH

Formulations	pH
1	5.5
2	5.6
3	5.7
4	5.7
5	5.8

Table 6: Results of skin irritation

Formulations	Irritation
1	No irritation occurs
2	No irritation occurs
3	No irritation occurs
4	No irritation occurs
5	No irritation occurs

6.6. Perfume stability

The perfume stability of medicated lip balm was studied by storing the formulations for 30 days and by recording the fragrance.

Table 7: Results of perfume stability

Formulations	Perfume stability
1	+++
2	++++
3	+++
4	+
5	+++

6.7. Surface abnormalities

Studies of surfaced effect such as formation of crystal on surface, contamination by container.

Table 8: Results of Surface abnormalities

Formulations	Abnormalities
1	No
2	No
3	No
4	No
5	No



7. Solubility test

The solubility test is performed by dissolving the formulations in different solvents and observe the solubility in each solvent.

7.1. Ageing test

Store the sample in 40⁰c for 1 hour and observe the various parameter such as crystallization of wax on surface and oil bleeds.

8. Test for Spredability

The Spredability was done by applying the product (at room temperature) repeatedly on to a glass slide to visually observe the uniformity in the formulation. For this test the following criteria were established by the feedback form.

1. *G-Good*: uniform, perfect application
2. *I-Intermediate*: uniform, appropriate application
3. *B-Bad*: not uniform, difficult or inappropriate application

9. Result and Conclusion

Herbal ingredient which was used for the preparation of herbal lip balm that contains coloring agent which a natural courant is obtaining from herb *Beta Vulgaris*. From the above studies we have conclude that by using the herbal medicated lip balm were due the risk factors which occurs due to regular used of synthetic lip products. After evaluation we have found that beetroot loaded medicated lip balm were found to be safe and effective in desired properties. Hence from the above studies it was concluded that formulated medicated lip balm having minimal and no

Table 9: Results of solubility test

Solvents	F1	F2	F3	F4	F5
Benzene	Soluble	Soluble	Soluble	Soluble	Soluble
Methanol	Sparingly soluble	Sparingly soluble	Sparingly soluble	Sparingly soluble	Sparingly Soluble
Ethyl Acetate	Sparingly insoluble	Sparingly insoluble	Sparingly insoluble	Sparingly insoluble	Sparingly insoluble
Hexane	Slightly Soluble	Slightly soluble	Slightly soluble	Slightly Soluble	Slightly Insoluble
Acetone	Sparingly insoluble	Sparingly insoluble	Sparingly insoluble	Sparingly insoluble	Sparingly Insoluble

Table 10: Results of ageing test

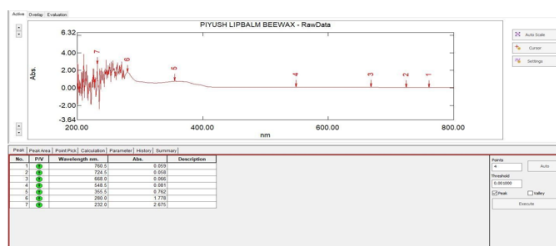
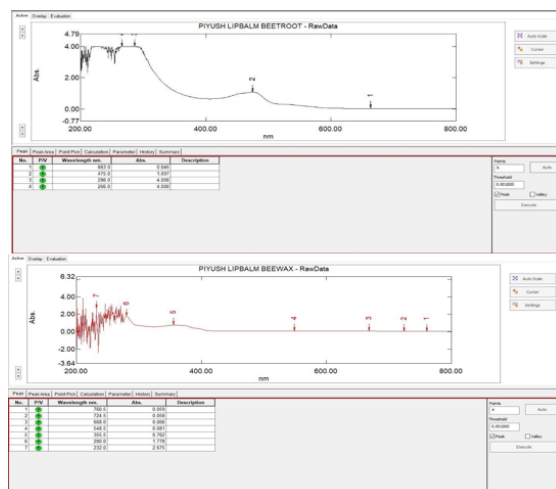
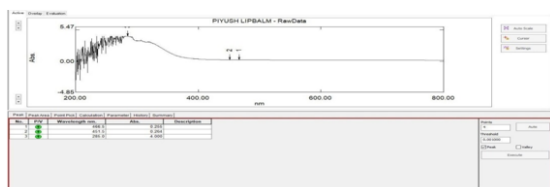
Formulations	Ageing Test
1	No
2	No
3	No
4	No
5	No

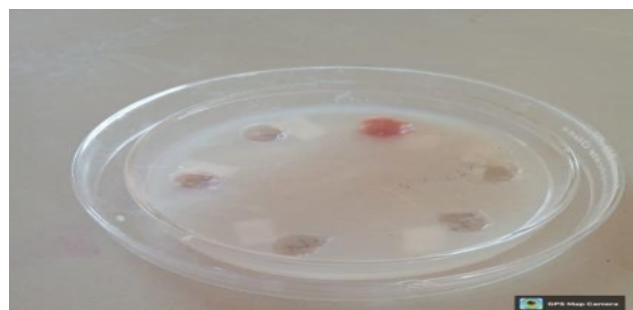
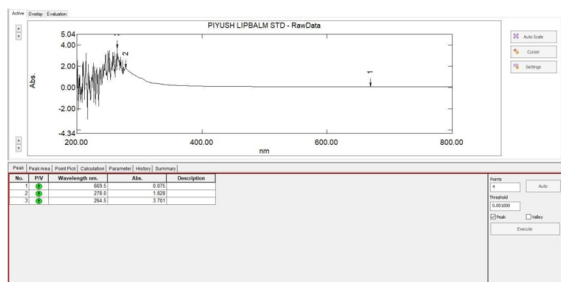
Table 11: Results of spreadability

Formulations	Spreadability
F1	Good
F2	Good
F3	Good
F4	Intermediate
F5	Good

side effects. And thus, show maximum effect on lips. UV spectroscopy is a quantitative technique used to measure how much a chemical substance.¹³

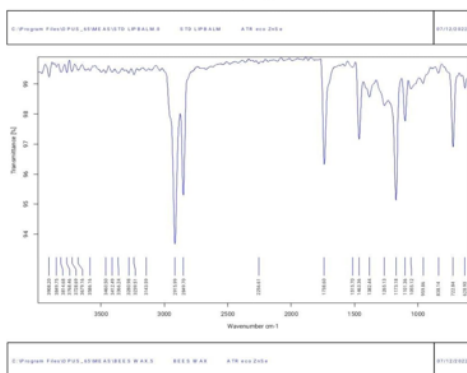
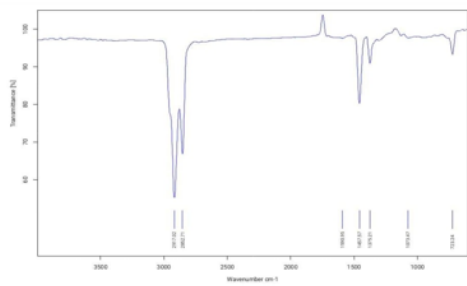
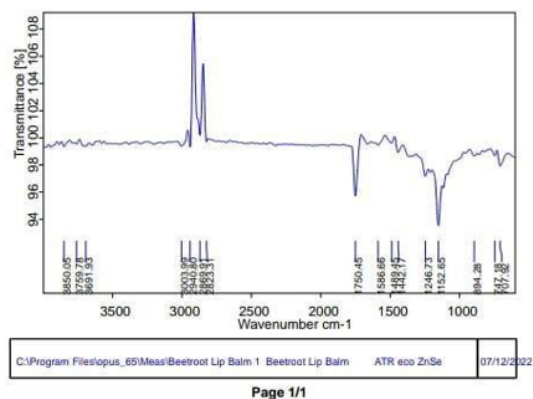
10. UV Analysis





11. FTIR

FTIR (Fourier-Transform infrared Spectroscopy) FTIR spectroscopy is used to quickly and definitively identify compounds. The principle of this spectroscopy is that when infrared (IR) radiations pass through a sample, some of the radiation is absorbed. The radiations that pass through the sample are recorded.



12. Microbial Assay

The microbiological assay becomes the most important method to quantify the concentration of active ingredient required for the inhibition of growth of antibiotic-resistant micro-organisms.

13. Source of Funding

None.

14. Conflict of Interest

None.

References


- Mali KD, Nafisa J, Raotole HS, Rathod KP, Shukla AA, et al. Formulation and Evaluation of Herbal Lip Rouge. *Int J Pharm Sci Rev Res.* 2019;55(1):13–7.
- Fernandes AR, Dario MF, Alessandra Riberio fernandes et al, stability evaluation of organic lip balm. *Brazilian J Pharm Sci.* 2013;49(2):293–9.
- Ankita DD, Dnyaneshwar BJ, Pratiksha KD. Review on Natural Lip Balm. *Int J Res Cos Sci.* 2014;5(1):1–7.
- Karunannithi B. Extraction of mango seed oil from mango kernel. *Int J Eng Res Dev.* 2015;11:32–41.
- Zia P, Sunita M, Sneha S, Praveen zia et al, extraction of natural colour from beetroot (beta vulgaris) its phytochemical analysis and antibacterial activity. *EAS J Nut Food Sci.* 2021;3:80–5.
- Ezejobogn MO. comparative forensic analysis of lipstick using thin layer chromatography. *Int J Chem Mol Eng.* 2019;13(5):231–5.
- Rani G.
- Kokate CK. Textbook of forensic pharmacy pharma books indicate. 2nd ed. and others, editor; 2006. p. 230.
- Sunil R, Shekhar TC, Ashutosh B. Formulation and evaluation of herbal lipstick. *Int J Drug Disc Herb Res.* 2011;3(1):26–30.
- Dash GK, Amira NA. Formulation and evaluation of lipstick containing natural ingredients, into. *Am J Pharm Sci.* 2017;1(4):3264–7.
- Kapoor VP. Herbal cosmetics for skin and haircare, natural products radiance. *NIScPR Online Period Reposit.* 2005;4:306–14.
- Sharma AV. Flavouring agents in pharmaceutical formulations. *Ancient Sci Life.* 1998;8(1):38–40.
- Kadu M, Vishwasrao S, Singh S. Review on Natural Lip Balm. *Int J Res Cosm Sci.* 2013;5(1):1–7.

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