

Formulation & Evaluation of Herbal Aloe Vera Cold Cream

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ABSTRACT

Cosmetics are the preparations which used to beautify and enhance the human appearances. The aim of the present research was to formulate and evaluate the aloe cold containing plant extracts prepared by using water in oil method for the purpose of nourishing and moistening the skin. The cold cream is prepared by using the oil and extract of aloe vera. Quality evaluation of the formulated product was assessed by using different evaluation methods. No change of the physical properties was observed in formulated cream. The formulated cream showed good consistency and spread ability, pH, no evidence of phase separation during study period of research. Stability parameters like visual appearance, nature, viscosity and fragrance of the formulated cream showed that there was no significant variation during the study period of research. The herbal extract containing cold cream gives the cooling and soothing effect due to slow evaporation of water present in the emulsion. The cold creams are more moisturizing as they provide an oily barrier which reduces the water loss from the stratum corneum, the outermost layer of the skin. They are water-in-oil emulsion and intended for application on skin or accessible mucous membrane to provide localized and sometimes systemic effect at the site of application.

INTRODUCTION

Cosmetics are the products which are generally used to beautify the skin and also to purify the skin . The cosmetics are the word derived from Greek word – ‘kosmesticos’ which means to adorn. From that time the materials which are used to promoting appearances or to beautify the skin are called as cosmetics. From ancient time till now people are still using herbal cosmetics for the beautification of skin. Cold cream is the water in oil emulsion. Cold cream gives the prolonged contact time in the site of application as compared to the other semisolid dosage form or formulation.

They give elegancy to the skin and it is not that much greasy. Due to the oil phase, it gives an emollience to the skin. The function of the cold cream is for restoring moisture to dry skin, it allows to eliminate the waste materials from the pores and also cools the body. It is easily watered washable and easy to wash away. They are non-irritating when applied on the skin. The water phase gives extra conservation to the skin. It gets liquefy at body temperature. It gets penetrated via the epidermis of the skin via the natural pores.

Aloe vera is commonly referred to as the 'miracle plant' as well as the 'wound healer' because of its incredible ability to counter numerous human sicknesses and in turn, heal and comfort for minor wounds and burns since then, but its mechanism of wound healing is not known. These plants are the shrubs with thick, fleshy leaves that holds water in the form of gel. Cosmetics are the products which are generally used to beautify the skin and also to purify the skin .

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CLASSIFICATION OF COSMETICS :-

According to the function, cosmetics are classified into the following groups:

- 1) Decorative function (Example - Lipstick, Nail polish, etc.).
- 2) Corrective function (Example - Dry cream and heavy face powder).
- 3) Protective function (Example-Dry cream and heavy face powder).
- 4) Curative function (Example - antiperspirant, hair preparation, etc ..

According to their uses, cosmetics are again sub-divided into the following classes:

- 1) For the skin (Example Powder, Cream, Lotion, Deodorant, Bath and cleansing preparation, Make up, etc.)
- 2) For the Hair (Example Shampoo, Hair tonic, Hair dressing, Shaving preparation, etc.).
- 3) For the nails (Example - Nail polish, Nail conditioner, Polish remover, etc.). etc.).
- 4) For the teeth and mouth (Example - Dentifrices, Mouth washes

Skin care product :-

- 1) Face wash
- 2) Moisturizing cream
- 3) Vanishing cream
- 4) Cold cream

Cold cream: -

Cold creams are water-in-oil or oil-in-water type emulsions added with certain fats (generally beeswax) and perfuming agents. These are applied on skin to provide smoothness and remove makeup. Cold creams are named so due to the cooling effect they impart on application.

An ideal cold cream should have the following properties:

- 1) It should have a low sensitization index.

- 2) It should be elegant in appearance.
- 3) It should be non-dehydrating.

Advantages

- 1) AS cold creams contain enough amounts of water and oil, they keep skin safe from the rough environments.
- 2) They also keep skin moisturized and safe from damages.

Disadvantages

- 1) However, as they contain petroleum, that might block the evaporation of water, they often clog pores resulting in pimples,
- 2) They might also dark the complexion if overused.



Figure -1 cold cream

AIM AND OBJECTIVE :

Aim:-

The aim of present study to formulate and evaluate aloe vera cold cream.

Objective:

To prepare the cream by using the emulsification technique.

1)Bees wax :-

Beeswax is one of the most important ingredients in homemade cosmetics. Why on earth I haven't yet written a word about beeswax? Maybe beeswax is just so self-evident that I haven't even thought about it. However, beeswax is the most versatile ingredient that suits perfectly to the skin. The beeswax itself is clear and transparent. Worker bees chew the beeswax which brings propolis to wax. The pollen carried by the worker bees gives to beeswax its clear, yellow colour.



Figure-2 Bees

2) Borax :-

Borax is used in **lotions and creams**. Borax is combined with wax to improve the consistency of lotions and creams. It also work as an emulsifier when used with wax and it is mostly used in hand soaps. It is excellent ingredient used for cleaning as it's alkaline in nature.



Figure -3 Borax

3) Liquid paraffin :-

Liquid paraffin, also known as **paraffinum liquidum** or Russian mineral oil, is a very highly refined mineral oil used in cosmetics and medicine. Cosmetic or medicinal liquid paraffin should not be confused with the paraffin (or kerosene) used as a fuel. It is a transparent, colorless, nearly odourless, and oily liquid that is composed of saturated hydrocarbons derived from petroleum.



Figure-4 Liquid

4) Aloe vera :-

Aloe vera is a herbal plant species belonging to family Liliaceae. It is an ingredient in many cosmetics because it heals, moisturizes, and softens skin. We just have to cut one of the aloe vera leaves to extract the soothing gel. Aloe vera contains amino acids like leucine, isoleucine, saponin glycosides that provide cleansing action, vitamins A, C, E, B, choline, B12 and folic acid and provide antioxidant activity. Aloe vera has great moisturizing properties because it is rich in polysaccharides, which also give it a gel-like appearance. On the other hand, its structure forms a protective film for the skin, which helps in its healing properties.

Benefits –

1. Soothe sun burn: Aloe vera gel has cooling properties and is anti-inflammatory. It helps with a protective layer for skin and also to retain moisture.
2. Moisturize the skin: Aloe vera unclogs the pores and softens the skin. It is also used as aftershave treatment.
3. Boosts healing of wounds: It is highly beneficial for burns, cuts and other injuries. It also helps to speed up skin cell reproduction by 8 times.
4. Fights skin-aging: Aloe vera has vitamin C and E which has anti-aging properties. It helps to increase collagen in the body.
5. Reduces infection and acne: It helps in gentle cleansing and treat pimples without causing any damage to the skin



Figure -5 Aloe vera

5)Rose water:-

Rose water is created by distilling rose petals with steam. Rose water is fragrant, and it's sometimes used as a mild natural fragrance as an alternative to chemical-filled perfumes. Rose water has been used for thousands of years, including in the Middle Ages. It's thought to have originated in what is now Iran. It's been used traditionally in both beauty products and food and drink products. It also comes with plenty of potential health benefits, including the following.



Figure -6 Rose water &)Distilled water :-

Distilled water is water that has been boiled into vapor and condensed back into liquid in a separate container. Impurities in the original water that do not boil below or near the boiling point of water remain in the original container. Thus, distilled water is a type of Purified water. purified water is water that is essentially free of microbes and chemicals. This is achieved by reverse osmosis (forcing the water through a membrane to get rid of chemicals, minerals and microbes), ozonisation (disinfecting water using ozone rather than a chemical), or distillation. The EPA requires purified water to not contain more than 10 parts per million of total dissolved solids in order to be labelled purified water. Distilled water is a type of purified water. Salts, minerals, and other organic materials are removed by collecting the steam from boiling water.



Figure -7 Distilled water

7)Methyl p-hydroxy benzoate -

The compound is widely used as a preservative for foods, cosmetics and medicines. Those methyl paraben-containing products caused contact dermatitis and drug hypersensitivity (Larson, 1977; Mowad, 2000), but there has been no fundamental study on allergic reactions related to methyl paraben. Methyl para hydroxy benzoate has been found to cause skin, eye, and respiratory irritations. Since it is an endocrine disruptor, methyl para hydroxy benzoate can mimic the hormone estrogen and cause negative effects to glands that secrete reproductive hormones. Million Marker does not recommend that pregnant women or women trying to conceive expose themselves to methyl p- hydroxy benzoate.



Figure -8 Preservative

MATERIALS

The materials used in the formulation of the cream is given in the table 1 and the equipment's used are given in the table-2.

Table-1

| Sr.no | Ingredients | Company name |
|-------|---------------------------|------------------------------------|
| 1 | Bees waxes | Central drug house private limited |
| 2 | Borax | Labogens |
| 3 | Liquid paraffin | Central drug house private limited |
| 4 | Distilled water | KBK Enterprises |
| 5 | Rose water | Dabar |
| 6 | Methyl-p-hydroxy benzoate | Central drug house private limited |

Instruments

Table-2

| Sr. No | Instruments | Company name |
|--------|--------------------|------------------------|
| 01 | Beaker | Boroglass |
| 02 | Glass rod | ZOOM Scientific World |
| 03 | Thermometer | GERA Research |
| 04 | Heating mantle | Laby Care(skss410) |
| 05 | Measuring cylinder | ReliGlas INDIA |
| 06 | Weighing machine | Digital scale (SF400A) |
| 07 | Mortar and pestle | |

Roles of ingredients :- Table-3

| Sr. No | Ingredients | Roles |
|--------|---------------------------|-----------------------------------------------------------------------|
| 01 | Aloe vera gel | Anti-ageing, Anti-Inflammatory, moisturizer, reduce acne and pimples. |
| 02 | Bees wax | It gives thickness to the cream. |
| 03 | Borax | With emulsifying agent to form soap. |
| 04 | Liquid paraffin | Lubricating agent, alkaline agent |
| 05 | Rose oil | Fragrance |
| 06 | Methyl p-hydroxy benzoate | Preservative |

Methods

The cream was prepared by using the cream base that is bee's wax, liquid paraffin, borax, methylparaben, distilled water, rose oil, Aloe Vera gel. The cream was prepared by using the slab technique/extemporaneous method for geometric and homogenous mixing of all the excipients and the aloe extracts. By using slab

technique, we have developed three batches of our herbal cream, namely F1, F2, and F3. All three batches were evaluated for different parameters like appearance, PH, viscosity, phase separation

Formulation of aloe cold cream

Heat liquid paraffin and beeswax in a borosilicate glass beaker at 75 °C and maintain that heating temperature. (Oil phase). In another beaker, dissolve borax, methyl paraben in distilled water and heat this beaker to 75 °C to dissolve borax and methyl paraben and to get a clear solution. (Aqueous phase). Then slowly add this aqueous phase to heated oily phase. Then add a measured amount of aloe Vera gel and stir vigorously until it forms a smooth cream. Then add few drops of rose oil as a fragrance. Put this cream on the slab and add few drops of distilled water if necessary and mix the cream in a geometric manner on the slab to give a smooth texture to the cream and to mix all the ingredients properly. This method is called as slab technique or extemporaneous method of preparation of cream.

Table-4 formulation of cold cream

| Sr. No | ingredients | Formula F1 | Formula F2 | Formula F3 |
|--------|----------------------------|------------|------------|------------|
| 01 | Bees wax | 15 gm | 20 gm | 25 gm |
| 02 | Borax | 0.8 gm | 0.8 gm | 0.8 gm |
| 03 | Liquid paraffin | 50 gm | 50 gm | 50 gm |
| 04 | Aloe vera | 1 gm | 1 gm | 1 gm |
| 05 | Rose water | 33.2 gm | 28.2 gm | 23.2 gm |
| 06 | Methyl p- hydroxy benzoate | 0.02gm | 0.02gm | 0.02gm |



Figure no 9 cold cream

EVALUATION OF ALOE COLD CREAM

1-Determination of Physical appearance

The physical appearance of cold cream was inspected visually against dark background. The average of three reading is recorded. The result is given in the table no 3

2- Homogeneity

Homogeneity is the formulated cold cream was tested for the homogeneity by visual appearance and by touch.

After feel Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.

Type of smear After application of cream, the type of film or smear formed on the skin were checked. Removal

The ease of removal of the cream applied was examined by washing the applied part with tap water.

3-Sensitivity test

The cream which was prepared has applied on 1cm skin of hand and exposed to sunlight for 4-5mins.



The above picture shows the results of sensitivity test.

4-Spread ability

The spread ability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spread ability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation. Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted.

Spread ability = $m \times l/t$ Where,

m = Standard weight which is tied to or placed over the upper slide (30g) l = length of a glass slide (5 cm) t = time taken in seconds.

5-pH :-

The pH of aloe cold cream was determined using pH meter. The most accurate common means of measuring pH is through a lab device called a probe and meter, or simply a pH meter. The probe consists of a glass electrode through which a small voltage is passed. The meter is a voltmeter, measures the electronic impedance in the glass electrode and displays pH units instead of volts. Measurement is made by submerging the probe in the semisolid until a reading is registered by the meter.



Fig 12 PH Meter

6-Viscosity

Viscosity of cream was done by using Ostwald viscometer at a temperature of 25 °C using spindle No. 63 at 2.5 RPM. According to the results all the three formulations showed adequate viscosity.

RESULT AND DISCUSSION

Results :- Physical observation – Table no 5

| Sr.no | Parameter | Formula F1 | Formula F2 | Formula F3 |
|-------|-----------|-------------|-------------|-------------|
| 01 | Colour | Faint green | Faint green | Faint green |
| 02 | Odour | Pleasant | Pleasant | Pleasant |
| 03 | Texture | Smooth | Smooth | Smooth |
| 04 | State | Semi solid | Semi solid | Semi solid |

Washability observation – Table no 6

| Sr.no | formulation | washability |
|-------|-------------|-----------------|
| 01 | F1 | Easily washable |
| 02 | F2 | Easily washable |
| 03 | F3 | Easily washable |

Sensitivity study observation – Table no 7

| Sr.no | formulation | Irritant effect | erythema | edema |
|-------|-------------|-----------------|----------|-------|
| 01 | F1 | No | No | No |
| 02 | F2 | No | No | No |
| 03 | F3 | No | No | No |

pH – Table

| Sr.no | Formulation | pH |
|-------|-------------|-----|
| 01 | F1 | 6.7 |
| 02 | F2 | 6.2 |
| 03 | F3 | 6.6 |

CONCLUSION

By using Aloe Vera gel the cream showed a multipurpose effect and all these aloe ingredients showed significant different activities. Based on results and discussion, the formulations F1, F2 and F3 were stable at room temperature and can be safely used on the skin. However the formula 1 showed the best results in all aspects.

The Aloe vera plant is a unique natural resource with numerous health and beauty benefits. Its cream is well-known for its soothing and moisturizing characteristics, making it a popular ingredient in skincare products. Furthermore, when consumed in juice, Aloe vera shows promise in terms of digestive health. While the advantages of Aloe vera are widely known, it is critical to use it with caution and to check with a doctor if you have any specific health issues. Overall, the aloe vera plant is an excellent complement to home cures and wellness routines. Aloe vera cold cream is a moisturizing solution that combines the soothing effects of Aloe vera with the rich emollients found in conventional cold creams. This cream is designed to hydrate and protect the skin, making it especially useful in dry or cold conditions. It helps to retain moisture, alleviate inflammation, and form a protective barrier against external irritants. Its mild, non-greasy texture makes it appropriate for all skin types, offering nourishment without blocking pores. Aloe vera cold cream is ideal for regular usage and can leave your skin feeling soft, smooth, and revitalized.

REFERENCES

1. Manisha Yogesh Sonalkar, Sachin Anna Saheb Nitave. Formulation and evaluation of polyherbal cosmetic cream. *World J Pharm Pharm Sci* 2016; 5:772-9.
2. N. Shah, B.M.Methal, (2006) *A Handbook of Cosmetic*, Vallabh Prakashan.
3. Mishra B, Pandit JK and Bhattacharya SK, Recent trends in drug delivery systems - transdermal drug delivery, *Indian Journal of Experimental Biology*, 28, 1990, 1001-1007.
4. Anuradha Keshwar, Unmesh Keshwar, Ashwini Deogirkar,
5. S. S. Dhurde, Veena Deo and B. K. Shrikhande, Formulation Development and Evaluation of Cream Containing Natural Essential Oils having Mosquito Repellent Property, *World Journal of Pharmacy And Pharmaceutical Sciences*, Volume 5, Issue 8, 1586-1593.
6. Storm JE, Collier SW, Stewart S, Metabolism of Xenobiotics During Percutaneous Penetration: Role of Absorption Rate and Cutaneous Enzyme Activity, *Fundam.Appl.Toxicol*, 1990;4:132- 41.
7. Clewell, M. Barnes, J. R. Endres, M. Ahmed, and D. K. S. Ghambeer, "Efficacy and tolerability assessment of a topical formulation containing copper sulfate and *Hypericum perforatum* on patients with herpes skin lesions: a comparative, randomized controlled trial," *Journal of Drugs in Dermatology*, vol. 11, no. 2, pp. 209–215, 2012.
8. Martin BA, Lemos CN, Dalmolin LF, Arruda C, Brait ÍSC, Cazarim MdS, da Cruz-Cazarim ELC, Bueno PCP, Júnior
9. MP, Pereira LRL, Cardili RN, Fonseca Vianna Lopez R. A New Approach to Atopic Dermatitis Control with LowConcentration Propolis-Loaded Cold Cream. *Pharmaceutics*.
10. zarang, O. Farshad, M. M. Ommati et al., "Protective role of probiotic supplements in hepatic steatosis: a rat model study," *BioMed Research International*, vol. 2020, Article ID
11. 5487659, 13 pages, 2020.View at: Publisher Site | Google Scholar 9. A. Azarang, O. Farshad, M. M. Ommati et al., "Protective role of probiotic supplements in hepatic steatosis: a rat model study,"
12. *BioMed Research International*, vol. 2020, Article ID 5487659, 13 pages, 2020.View at: Publisher Site | Google Scholar
13. Manisha Yogesh Sonalkar, Sachin Annasaheb Nitave. Formulation and evaluation of
14. polyherbal cosmetic cream. *World J Pharm Pharm Sci* 2016;5:772-9
15. N. Shah, B.M.Methal, (2006) *A Handbook of Cosmetic*, Vallabh Prakashan.
16. Mishra B, Pandit JK and Bhattacharya SK, Recent trends in drug delivery systems -
17. transdermal drug delivery, *Indian Journal of Experimental Biology*, 28, 1990, 1001-1007.
18. MR, Drummond AJ, Ferro VA. Screening methods used to determine the antimicrobial properties of Aloe vera inner gel. *Methods*. 2007;42(4):315-20.
19. Chandegara VK, Varshney AK. Aloe vera L processing and products: A review. *International Journal of Medicinal and Aromatic Plants*. 2013;3(4):492-506.
20. Sánchez-Machado DI, López-Cervantes J, Sendón R, Sanches-Silva A. Aloe vera: Ancient knowledge with new frontiers. *Trends in Food Science & Technology*.
21. Al-Salman NTS, Al-Gharawi JK. The effect of locally extracted Aloe vera oil on the productive performance of Foote C. A history of Aloe vera: From the Arabian desert
22. to that cream you use on your hand. BMC Series Blog, BioMed Central. 2015. Available from:

23. properties of Aloe vera Linn-an overview. International Journal of Pharmaceutical Sciences Review and Research. 2010;4:106