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A REVIEW ON PREPARATION AND EVALUATION OF HERBAL COLD CREAM

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ABSTRACT:-

Cosmetics are widely used by both men and women to impart beauty and to improve their appearance. Demand for herbal cosmetics is now a days increasing because they are harmless. Also, they have less side effects as they are prepared by taking extract of natural herbs and shrubs. Because of its good convenience and economical with good quality standards it is highly accepted by many people. Herbal cosmetics are prepared in many forms like cold cream preparations containing natural extract of crude drugs like neem, turmeric, fruit extract like Bombax Ceiba Fruit Pulp etc., by adding variety of ingredients in formulation. Cold cream is an emulsion which when applied on the skin, a cooling effect is produced due to slow evaporation of water present in emulsion. These formulations can be evaluated by using various evaluation parameters like pH, viscosity, irritancy, spreadability, microbial growth, thermal stability, homogeneity, acid value, saponification value, accelerated stability studies, patch test, smear test, after feel, washability, physical properties, dye test, after feel, in vitro diffusion study etc. The objective of this review is to compile the information of different herbal formulations of cold cream and its evaluation. Herbal cold cream formulations studied by many researchers and this information can be used by many researchers for novel herbal cosmetic formulations with new herbs.

KEYWORDS:

Herbal cosmetics, Natural extract, Cold cream, Neem, Turmeric, Fruit extract

INTRODUCTION

More herbal ingredients are used to provide defined cosmetic benefits only, the term is called "Herbal cosmetics" the demand for herbal medicines is increasing rapidly due to their lack of side effects. The herbal cosmetic is that it is purely made by herbs and shrubs. The herbs extracted from nature do not show adverse effects on human skin. Now a day's cosmetics are used to improve their appearance. Cosmetics are prepared and used to improve their beauty. For various types of skin ailments formulations like skin protective, sunscreen, anti-acne, anti-wrinkle, either natural or synthetic. The development process for cosmetic formulation needs maintenance of quality standards. The herbs used in cosmetic preparations have varieties of properties like antioxidant, anti-inflammatory, antiseptic and anti-bacterial, etc. herbal products having no side effects compared with synthetic formulations. Cold cream is an emulsion which when applied on the skin, a

cooling effect is produced due to slow evaporation of water present in emulsion. They are generally prepared by emulsification of oils and water. In older days cold cream was prepared from animal fats and vegetable oils.

REVIEW OF LITERATURE:

The use of herbal ingredients in cosmetics has gained popularity due to the belief that natural ingredients are gentler on the skin compared to synthetic chemicals. Ingredients like neem, turmeric, and fruit extracts are well-known for their potential benefits in skincare. Their inclusion in cold creams can provide not only moisturization but also potential skin-soothing and antioxidant properties[4]. The evaluation parameters you mentioned, such as pH, viscosity, irritancy, spreadability, microbial growth, thermal stability, homogeneity, acid value, saponification value, accelerated stability studies, patch tests, smear tests, after-feel, washability, physical properties, dye tests, and in vitro diffusion studies, are crucial for ensuring the safety, efficacy, and stability of these herbal cold cream formulations. These parameters help determine how the product interacts with the skin, how it performs under different conditions, and how it holds up over time. Researchers and cosmetic formulators often conduct such evaluations to ensure that the products they develop are safe, effective, and provide a positive experience for consumers. By compiling this information, as you're doing, it becomes a valuable resource for others in the field who are looking to develop new herbal cosmetic formulations or to improve existing ones[2]. It's worth noting that while herbal ingredients are generally considered safer and more natural, individual reactions to these ingredients can still vary. Patch tests and other evaluations help identify any potential allergic reactions or sensitivities that might arise[2].

Benefits of herbal cosmetic

- Being natural, least harmful effect on the skin or other body parts.
- Relatively more safe.
- More placebo effect to the consumers due to its use in traditions and culture.
- Flexibility in formulation.
- Population proves effects from ancient time.
- Easy availability.
- Economical.
- It helps to cleans and beautify the body without side effects.
- It normalizes the body functions.
- It has extreme nutritional value with high content of vitamins and minerals.
- It enhances the energy level of body.
- It stimulates the body's immune system without disturbing the natural balance of body.
- Variety of Phyto-constituents can be incorporated. [1,2]

Advantages of herbal cold cream

- Ease of application.
- Convenient to all the population
- Avoidance of risk.
- In case of intra and inter-patient variations, avoid fluctuation of drug levels.
- No special risk or technician required for application of product.
- Achievement of efficacy with lower total daily dosage of drug.
- High patient compliance.

• Disadvantages of herbal cold cream

- Larger particle sized drugs cannot be easily absorbed through the skin pores.
- Chances of skin irritation of contact dermatitis due to any drug interactions.
- Poor absorption may result due to the poor permeability of some drugs through the skin.
- Chances of allergic reaction.
- It can be used mainly for drug which required very small plasma concentration for action.
- Denaturation of the drugs takes place due to the presence of an enzyme in epidermis.

• Equipment used in the preparation of herbal cold cream.

Equipment name- Manufactured by UV visible spectrophotometer- Shimadzu (1700) Brookfield viscometer- Analytical technologies Digital pH meter- Analytical technologies Magnetic stirrer- Analytical technologies.

• Characterization of herbal cold cream percentage yield

The prepared herbal cold cream of all batches were accurately weighed. The measured weight of prepared herbal cold cream were divided by total amount of all the excipients and drug used in the preparation of the herbal cold cream gives the total percentage of herbal cold creams. It was calculated by the following equation. Percentage yield = Actual Weight of product/ Total weight of excipients and drug x 100 [3] .

• Preparation of Herbal Cold Cream

- **Procurement of material:** - Neem, Turmeric, Aloe Vera collected from Thakur Shivkumarsingh Memorial Pharmacy college garden.
- **Material:-** Neem oil , Sesame oil , Turmeric powder, Aloe vera , Beeswax , Borax , Vitamin E capsule, Rose water.
- **Preparation of herbal cold cream :-** The formulation can be prepared by adding two different phases which are as follows.

Phase 1 : Melt beeswax in a china dish on to hot plate .To this, all the oils is added and then heat on a hot plate at 70°C **Phase 2:** Then in a 100ml beaker , borax was dissolved heated along with Rose Water on a hot plate at 70°C.



Fig :-1

Turmeric powder ,aloe vera and vitamin E capsule was added in the beaker. While still hot add the phase 1 into the phase 2 are heated at same temperature i.e. 70°C continue this process for 5 minutes, stir all the time then remove from the heat and stir until it cools down and a semi solid mass was obtain

Table no.1. : Formulation table for herbal cold cream (for 98 gm)

Sr.No.	Ingredients	Quantity
1	Neem oil	46 ml
2	Turmeric powder	1gm
3	Aloe vera	2ml
4	Seame oil	2ml
5	Borax	1ml
6	Beeswax	20 gm
7	Rose water	26 ml
	Net Weight	98 gm

● Evaluation of cream

1. pH measurement: The pH meter was calibrated using standard buffer solution. About 0.5gm of cream was weighed and dissolved in 50ml of distilled water and its pH was measured using digital pH meter.

2. Appearance: The appearance of the cream was judged by its color, pearsence, roughness, and graded.

3. Viscosity: Viscosity of the formulation was determined was brookfield or ostwald viscometer at 100 RPM, using spindle no. 7 at temp 25oC. The determinations were carried out in triplicate and the average of three reading was recorded.

4. Acid Value: Take 10gm of substance dissolve in accurately weighed in 50ml mixture of equal volume of alcohol and solvent ether. The flask was connected reflux condenser and slowly heated, until sample was dissolved completely. To this 1ml of phenolphthalein added and titrated with 0.1NNaOH, until faintly pink colour appears after shaking for 30sec. $\text{Acid Value} = n \times 5.61/w$

n = number of ml of NaOH required w = weight of substance

5. Saponification value:

Introduce about 2 gm of substance refluxed with 25 ml of 0.5N alcoholicKOH for 30min, add 1ml of phenolphthalien and titrate immediately, with 0.5N HCl. $\text{Saponification Value} = (b-a) \times 28.05 / w$ The volume of blank titre in ml= a The volume of sample titre in ml=bThe weight of substance in gm=w

6. Irritancy test: Mark an area (1 sq. cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted.

Irritancy, erythema, edema, was checked if any for regular intervals upto 24hrs and reported.

7. Accelerated stability testing:

Accelerated stability testing of prepared formulations was conducted for 2 most stable formulations at room temp, studied for 7 days. The formulation were placed at $40^{\circ}\text{C} + 1^{\circ}\text{C}$ for 20 days. Both formulations were kept at room temp and elevated temp and observed on 1st, 5th, 10th, 15th and 20th day for any change in color, phase separation etc.

8. Homogeneity: The formulation were tested for homogeneity by visual appearance and by touch.

9. Determination of spreadability:

Spread ability may be expressed by the extent of the area to which the topical application spreads when applied to the affected parts on the skin. The therapeutic efficiency of the formulation also depends upon its spreading value. Sample (about 2gm) was applied in between two glass slides and they were pressed together to obtain a film of uniform thickness by placing 1000gm weight for 5 minutes. There after a weight 10gm was added to the pan and the top plate was subjected to pull with the help of string attached to the hook. The time in which the upper glass slide moves over the lower plate to cover a distance of 10cm is noted. The spreadability (S) can be calculated using the formula $S = m \times L/T$

Where, S – Spreadability

m- weight tied to upper glass slide l- length moved

on a glass slide t- time taked

The determination were carried out in triplicate and average of three readings was recorded.[4]

10. Dye test:

The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide then covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red the ground colorless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e. the disperse globules appear colorless.

11. Test for microbial growth:

Agar media was prepared then the formulated cream was inoculated on the plate's agar media by streak plate method and a controlled is prepared by omitting the cream. The plates were placed in the incubator and are incubated in 37°C for 24 hours. After the incubation period, the plates were taken out and the microbial growth were checked and compared with the control.

12. Washability:

The cream was applied on the hand and observed under the running.[5]

13. Test for thermal stability:

Thermal stability of the formulation was determined by the humidity chamber controlled at 60- 70% RH and $37 \pm 1^{\circ}\text{C}$

14. Patch test –

About 1-3 gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m. of the skin. Control patches were also applied. The site of patch is inspected after 24 hrs.

15. Physical properties:

The Cream was observed for color, odour and appearance.[6]

16. After feel:

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

17. Removal:

The ease of removal of the cream applied was examined by washing the applied part with tap water [7]

18. In vitro diffusion study:

Cellophane membrane was used for this study in Frantz Diffusion Cell. 100mg of prepared Ashwagandha, Curcumin and Neem herbal cold cream is placed in donor compartment separately which is filled phosphate buffer 6.8. The membrane was mounted between the compartments of the Frantz Diffusion Cell. Reservoir compartment was filled with the phosphate buffer 6.8. The study was carried out at 37 ± 1 °C and speed was adjusted to 100-200 rpm and it is carried out for 24 hours. 5ml of sample was withdrawn from each reservoir compartment by the help of hypodermic syringes at half an hour interval for 2 hours, then 1 hour interval for 10 hours and finally 6 hours to next 24 hours and absorbance was measured spectrophotometrically at 422.1nm for Curcumin, 208.5 nm for Ashwagandha and at 320.4nm for Neem. Each time reservoir compartment was replenished with the 5ml fresh volume of phosphatebuffer 6.8 pH solution to maintain constant volume.[3,8]

Conclusion And Future Scope:

In conclusion, the surge in demand for herbal cosmetics, particularly cold creams enriched with natural extracts, reflects a growing preference for safer and more sustainable beauty solutions. This trend is driven by the perception that herbal ingredients offer reduced side effects and enhanced skin benefits. The use of extracts from herbs like neem, turmeric, and Bombax ceiba fruit pulp in cold cream formulations is gaining momentum due to their potential to provide effective skincare while maintaining economic viability and quality standards. The diverse evaluation parameters discussed, including pH, viscosity, irritancy, spreadability, and others, underscore the comprehensive assessment these formulations undergo. The amalgamation of traditional herbal wisdom with modern cosmetic science presents a promising avenue for both consumer satisfaction and industry innovation.

Looking ahead, the future scope of research lies in refining and expanding the understanding of these herbal cold cream formulations. Further studies could delve into optimizing ingredient concentrations, exploring novel herbal extracts, and investigating the longterm effects of these products on various skin types. The potential integration of cutting-edge techniques, like advanced spectroscopy and nanotechnology, could elevate the formulation process. Furthermore, in-depth clinical trials and consumer perception studies could enhance the credibility of these products in mainstream skincare. As sustainability gains precedence, there is also room for investigating environmentally friendly packaging options and improving the overall eco-friendliness of these formulations. Ultimately, the synthesis of traditional knowledge and contemporary research paves the way for innovative herbal cosmetic solutions that cater to diverse consumer preferences and holistic well-being.

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