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A Review On Preparation And Evaluation Of Calamine Lotion

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ABSTRACT

Herbal cosmetics are manufactured by various cosmetic ingredients, which are the base in which one or more herbal ingredients are used in curing various skin problems. The name itself explains that the cosmetics herbal is natural and free from all the harmful synthetic chemicals which otherwise may prove to be toxic to the skin. Natural cosmetics are relatively safer as compared to other beauty products. Cosmeceuticals, being mixtures of cosmetics and pharmaceuticals, aim to enhance the health and beauty of skin. These are products whose objective is to produce a desired effect: preventive antiacne and antiwrinkle formulations, all the way up to sun screens. Calamine lotion is one of the mostly used antiseptic and protective for its cooling effect in soothing different disorders in the skin. Instead of traditional synthetic products, different plant parts and plant extracts are used in this study to procure calamine lotion having natural humectants, e.g. aloe-vera gel and honey. Herbal cosmetics are the preparations used to enhance the human appearance. This study compares the semi synthetic activity of glycerine to that of other humectants in regard to their property of emollience to make sure whether calamine lotion can or cannot be prepared using natural humectants.

Keywords: Humectants, Emollient, Antiseptic, Calamine Lotion.

INTRODUCTION

Calamine lotion has been approved as an over-the-counter medication by the United States of America Food and Drug Administration (US FDA) that can be used as a skin protectant. Calamine lotion is one of the anti-inflammatory and antipruritic medicines classified under the list of essential medicines, as produced by the World Health Organization, under the category of dermatological medicines (topical). All shake lotions should be dispensed in wide neck bottles. There is some difference in the ingredient of calamine lotion as mentioned in British Pharmacopoeia (BP) and United States Pharmacopoeia (USP). The difference starts from the constituents of calamine itself. According to BP,calamine is basic zinc carbonate coloured with ferric oxide. Calamine according to the USP is zinc oxide colourued with ferric oxide. Calamine lotion is one of the shake lotions. Its active ingredients are calamine and zinc oxide.
It contains bentonite, glycerin, sodium citrate and liquified phenol. In this article, calamine lotion and preparations which have calamine lotion. The topical preparations which contain zinc oxide or calamine alone and not as a whole of calamine lotion, are not included. Simple suspensions or solutions of medication in water, alcohol, or other liquids are referred to as lotions. When applied on the skin, the lotion will deposit a film of medicine on skin surface, as the liquid part of it evaporates. Shake lotion is an aqueous suspension of powders. Thus, such lotions should be shaken before application every time

1.1 PROJECT AIM AND OBJECTIVES

Aim: To prepare and submit of 30 ml of calamine lotion

OBJECTIVES

1. The objective of the present work was to formulate the Calamine lotion which contains no side-effect or adverse reaction.
2. Test the prepared calamine lotion for skin moisturization
3. Calamine lotion is used to rejuvenate the skin, provide soothing effect to the skin.

BENEFITS OF CALAMINE LOTION

1. Relieves Skin Irritation: Calamine lotion can soothe irritation that comes with rashes, including a heat rash
2. Drain exuding skin: It helps in drying out the exuding or oozing irritation on the skin areas, which helps heal such irritations.
3. It may reduce minor burns and sunburns.
4. Treats Acne It does not cure acne but can be applied directly to certain areas on the skin to help dry out pimples.
5. It can be used to treat pruritus and urticaria along with topical corticosteroids or oral.

TYPES OF LOTION

From young skin to anti-tanning, anti-wrinkles to cellulite reduction, lotions come for a wide variety of purposes. Broadly speaking, the classification of body lotions can be done as:

Skin maintaining: These lotions are aimed at keeping your skin soft, healthy and glowing. They may be further classified under lotions for dry, normal and oily skins.

Damage repairing: For very dry, highly sensitized or problem skin types.

Anti-wrinkle or anti-ageing: Especially for mature skin, they often have retinol, vitamin E and other Anti-oxidants.

Anti-tan and fairness: Some works on already tanned skin while others claim to work internally by activating a more radiant skin by suppressing melanin (the skin's natural darkening pigment) production.

Anti-stretch marks: Bestsellers with pregnant women, obviously, and are available in two stages -the preventive stage and the repair stage.

EXCIPIENT USED IN LOTION

1.Thickeners: It usually thickens the cream, allowing the cream to spread out flatly on the skin and stay there. Some of the examples are carbomers, xanthan gum, and cellulose derivatives.
2. Emulsifying Agents: Those help to mix oil and water parts into a stable emulsion; common emulsifiers include glyceryl stearate, acetyl alcohol, and polysorbates.
3. Preservatives: They prevent microbial growth and enhance the shelf life of the lotion. Parabens, benzyl alcohol, and phenoxyethanol are examples.
4. Antioxidants: They prevent the ingredients of lotions from oxidation, which leads to degradation. Examples of common antioxidants are BHT or butylated hydroxytoluene as well as tocopherol, or vitamin E
5.Oily compounds: In topical cream formulations, oily compounds act as carriers for the active substances.

USES

Lotions lock the moisture within, keeping the skin hydrated, ensuring that it remains healthy, soft, and supple. The moisturizing lotions are less greasy compared to a cream and have more water content in them. Other benefits of lotions: They reduce dryness in the skin, and flaky spots.

II. FORMULATION OF CALAMINE LOTION

Sr. No.	Ingredients	For 30ml
1	Calamine	4.5gm
2	Zinc Oxide	1.5gm
3	Bentonite	0.9gm

4	Glycerin	0.15ml
5	Sodium citrate	0.15ml

Calamine: It is zinc carbonate or zinc oxide with 98% coloured pale pink with ferric oxide 2%, and it has bland, soothing, and antipruritic properties.

Zinc oxide: This is an inorganic powder with a cooling effect. It possesses soothing as well as protective properties. It can act as a broad-spectrum sunscreen by blocking sunlight. Therefore, it has been used as an inexpensive physical sunscreen. The antibacterial property was attributed to the structural morphology of zinc oxide that induces toxicity and a killing effect on bacteria.

Bentonite: Bentonite is a colloidal hydrated aluminum silicate. Bentonite is used as a stabilizer in shake lotions.

Glycerin: Humectant, emollient and stabilizer.

Sodium citrate: Sodium citrate is used as a stabilizer to stabilize the pH in lotion.

ingredients used in preparation of calamine lotion and their respective uses.

Sr. No	**Ingredients**	**Uses**
1	Calamine	Astringent
2	Zinc Oxide	Protective
3	Bentonite	Suspending agent
4	Glycerin	Soothing agent
5	Purified water	Vehicle
6	Aloe vera gel	Moisturization
7	Vitamin E	Antioxidant

III. METHODOLOGY

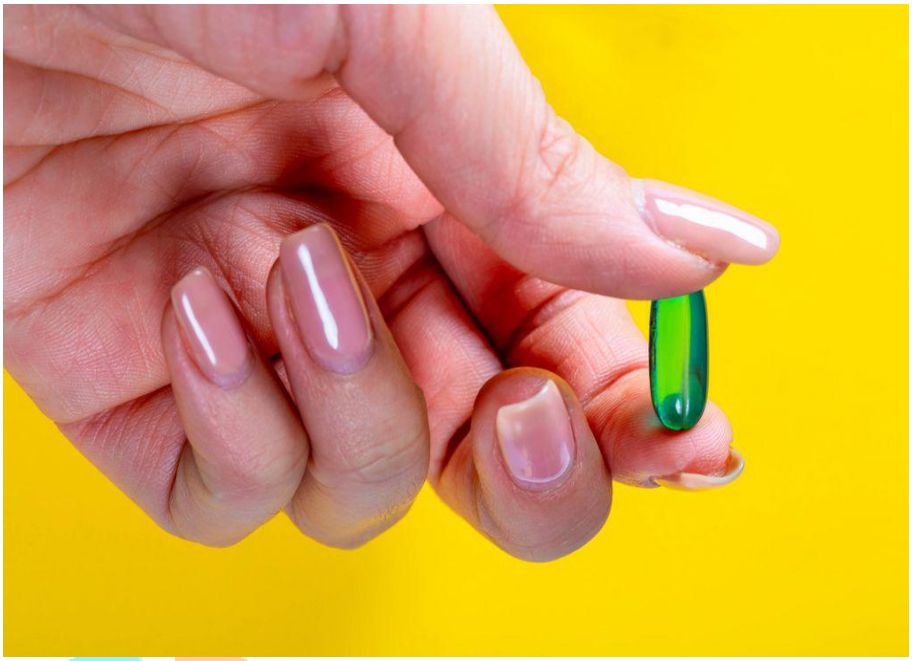
MATERIALS AND METHODS

MATERIALS:

3.1Calamine Powder: Calamine powder is a blend of zinc oxide and some amount of ferric oxide. The iron portion that is present in calamine powder as ferric oxide

3.2. Aloe gel + Vit E: Take a fresh aloe leaf from a plant and use it to prepare the leaves. This can be done by cutting off one of the outer leaves at the bottom of the plant. We could also use a store-bought leaf. After very clean washing removing all dirt, stand it upright in a cup or a bowl for 10–15 minutes. This enables the yellowish resin to drain out of the leaf The resin contains latex, which may be irritating to our skin thus, it is necessary to complete this step. Once the resin has fully drained from it wash away whatever is left inside the leaf and then using a small knife or vegetable peeler remover the thick skin.

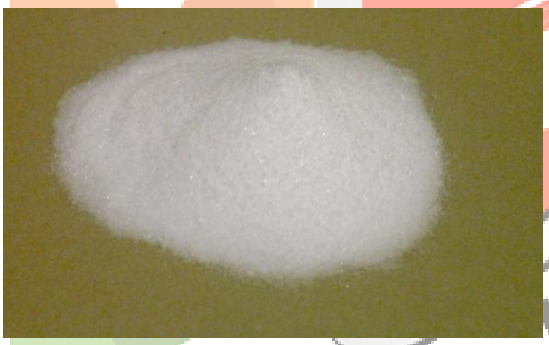
II. Prepare the gel Once you have removed the leaf skin, you can see the natural Aloe vera gel. Take a little spoon and scoop it into your blender. Care should be taken to exclude bits of Aloe vera skin. Blend the gel until it becomes frothy and liquidly - it shouldn't take more than a few seconds at this stage. Our gel is now ready for use. Should you wish to store it for more than 1 week we do, of course include preservatives.



Bentonite: It is an absorbent swelling clay consisting almost wholly of montmorillonite. It commonly forms by the weathering of a combination of volcanic ash in seawater which transforms the original glass constituents of the ash into clay minerals.

Zinc Oxide: Zinc oxide is a zinc molecular entity. ChEBI. Zinc oxide is an inorganic compound that finds application in many manufacturing processes. It is present in rubbers, plastics, ceramics, glass, cement, lubricants, paints, ointments, adhesives, sealants, pigments, foods, batteries, ferrites, fire retardants, and first-aid tapes

Sodium Citrate: Sodium citrate is the sodium salt of citric acid. This salt has in its chemical makeup white, crystalline powder or white, granular crystals, slightly deliquescent in moist air, freely soluble in water, practically insoluble in alcohol. Like citric acid, it has a sour taste.



Glycerin: is a humectant, which means it attracts moisture from the environment and the deeper layers of the skin, helping to keep the skin hydrated and plump. It's suitable for all skin types, including sensitive and acne-prone skin, as it is gentle and non-comedogenic (doesn't clog pores) Glycerin also strengthens the skin's natural barrier and has antimicrobial properties, which can help protect the skin from bacteria.

Instruments:

Beaker, test tube, weighing machine, mortar & pestle, funnel, burette, pipette, ring stand, watch glass, glass slide, glass rod, measuring cylinder, pH meter, hot air oven.

METHODS:

1.PHYSICAL APPEARANCE:

I. Calamine:

Colour- Peachy pink

Odour- Characteristics

Texture- Powder

II. Aloe gel:

Colour: Light greenish

Odour: Characteristics

Texture: Viscous liquid

2. **pH**: Normally pH of aloe is 4.50

3. IDENTIFICATION TESTS:

I. Identification tests for calamine lotion: A. To 1 ml add 1ml of periodic acid reagent, centrifuge, shake, and add 0.25 ml of the supernatant liquid to 1 ml of ammoniacal silver nitrate solution in a test tube; a silver mirror is produced on the walls of the tube.

B. Mix 1ml with 30 ml of water, centrifuge and decant the supernatant liquid. Suspend the residue in 30 ml of water, add 0.5ml of hydrochloric acid, mix, and filter. 2.5 ml of the filtrate, after neutralization by drop-wise addition of 1 M sodium hydroxide, gives the reactions of zinc salts.

Procedure:

1) Weight all the ingredients like calamine, zinc oxide and bentonite placed in mortar.

2) Triturates it to make uniform size by size reduction

3) The mixture was grinded to make them fine particles

4) 0.15ml of glycerin and 30 ml of water was added and a fine paste was made out of them

5) Now carefully make dilution of this paste using water

6) Now make this paste pourable by dilution

7) Use water for dilution

8) Transfer it in a measuring cylinder

9) Now adjust the final volume up to 30 ml using water

10) Transfer it in a suitable container

IV. RESULT AND DISCUSSION

EVALUATION:

Organoleptic Evaluation: the organoleptic parameter includes it's colour, odour, nature, texture, appearance evaluated. It's manually physical properties.

Sr.No	Parameter	Observation
1	Colour	Slightly yellow
2	Odour	Odourless
3	Texture	Non-greasy, light texture
4	Appearance	Semi-solid
5	Nature of calamine lotion after applied to skin	Provide soothing and nourishing to the skin

Physicochemical Evaluation:

Sr.No.	Parameter	Observation
1	Homogenisity	Homogenous
2	Viscosity test	66.1%
3	Thermal test	Stable
4	Spread ability	6.3
5	Water content	90%

Irritancy Test: the prepared calamine lotion was subjected for irritancy test and the result shown as follows.

Sr.No	Parameter	Observation
1	Irritation	Nil
2	Redness	Nil
3	Swelling	Nil

Observation: Irritancy test showed negative for irritancy, redness, swelling, as the calamine in their natural form with addition additional chemical were found to be compatible with the skin.

Label - Calamine lotion I.P……30 ml

Calamine lotion IP……..30 m|

Rx

Calamine ……..……4.5gm

zine oxide……..……1.5gm

Bentonite……..……0.9gm

Sodium citrate…..……0.15gm

Liquid Phenol……0.15ml

Glycerine……..……0.15ml

Rose water……..……0.3ml

Mfg. Date. Apr 2024

Exp Date. Oct 2026

Mfg. Lic NO : 30/04/24

Batch No. E\92

SHAKE WELL BEFORE USE

Category- As protective

FOR EXTERNAL USE ONLY

Lotion should be applied with a cotton ball moistened with the lotion.

Then the medication should be allowed to dry on the skin.

Storage: Keep air tight bottle in the cool page

Mfg. By- Aditya college of pharmacy

V. CONCLUSION

Here in the work done it has been concluded that calamine lotion can be prepared from herbal natural extract like Aloe-vera. The formulation showed the best results when compared with other formulations. It showed the pH similar to skin pH and no skin sensitivity with greater stability. Calamine/diphenhydramine is commonly prescribed as systemic antihistaminic which is available as an over-the-counter medication in many countries for countless conditions including nasal allergy and the common cold. We should be aware of its particular adverse reactions and as far as the possible combination of calamine and diphenhydramine is to be avoided.

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