

Design, Characterization & Evaluation Of Calamine Lotion

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ABSTRACT:-

Calamine lotion is widely used as an antiseptic and protective for its cooling and soothing effect in this study to procure calamine.lotion for being natural humectants, e.g. aloe-vera gel and vitamin E. Herbal cosmetics are the preparations which are used to enhance the human appearance. The purpose of this study is to compare the semi- synthetic activity of glycerine with other humectants in terms of their emollient properties to ensure whether calamine lotion can be formulated using natural humectants or not. Calamine lotion is also a bland, antipruritic lotion that is commonly used for several dermatological conditions. Skin reactions due to this preparation are very rare.

Calamine is made up of zinc oxide and ferric chloride, the exact compound that might have caused the adverse drug reaction (ADR) is not found till now.

INTRODUCTION:-

The concept of beauty and cosmetics dates back to the ancient civilization of mankind. In general, herbal cosmetics are also called herbal cosmetics. Herbal cosmetics are formulated using various cosmetic ingredients that form a base in which one or more herbal ingredients are used to treat different types of skin conditions. The name itself suggests that herbal cosmetics are natural and do not contain any harmful synthetic chemicals. Instead of traditional synthetic products, these products use various plant parts and plant extracts, such as Aloe vera gel and vitamin E. There is a growing number of consumers who are concerned about ingredients such as synthetic chemicals, mineral oils, who demand more natural ingredients, without harmful chemicals and with an emphasis on the properties of plant substances. Calamine is basic zinc carbonate colored with iron oxide.

Calamine had mild astringent and antipruritic effects and is used as a poultice, cream, lotion and ointment for various skin conditions. Diphenhydramine is an H1 antihistamine used for allergic conditions known to cause skin hypersensitivity. Contact dermatitis is an acute

or chronic inflammation of the skin that occurs as a result of contact with irritating or allergic substances.

MATERIALS:-

1.ALOEVERA:-

PLANT PROFILE: Botanical name:

Aloe barbadensis miller Family: Asphodelaceae.Common names: Aloe vera and Ghritkumari.

Cultivation: It grows mainly in dry areas of Africa, Asia, Europe and America. In India, it is found mainly

in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu.

Active ingredients: Vitamins (vitamin A, vitamin C, vitamin E and vitamin B12), enzymes, minerals, sugars, lignin, saponins, salicylic acids, amino acids, folic acids and choline.

Chemical formula-C₁₆H₁₃NO₃

Drug category - Antiseptic and anti-inflammatory Description - Green or completely transparent color

Features-Hydrates dry skin

Fights acne Removes dark circles Soothes irritated skin Treats sunburn Removes dead skin cells

Relieve eczema and psoriasis



ALOE-VERA

Aloegel + Vit E:I. Prepare aloe leaves-

To use a fresh aloe leaf from the plant, first cut off one of the outer leaves from the base of the plant. We can also use a sheet from the store. After a good wash, remove all dirt and then stand it upright in a cup or bowl for 10-15 minutes. This allows the yellow colored resin to drain

from the leaf. Resin contains latex that can irritate our skin, so completing this step is important. After the resin is completely drained, wash off the residue on the leaf and use a small knife or vegetable peeler to peel off the thick skin.

II. Make a gel =Once the leaf is peeled, we can see the natural Aloe vera gel. Scoop it into the blender using a small spoon. We should be careful not to include any pieces of Aloe vera peel. Stir the gel until it foams and liquefies, which should only take a few seconds. At this point our gel is ready to use.

2. CALAMINE:-

Calamine powder is a mixture of zinc oxide combined with a certain amount of iron oxide. The presence of iron (in the form of iron oxide) in Calamine powder.

DRUG PROFILE:-



CALAMINE POWDER

Chemical formula- $ZnCO_3$

Description - Amorphous pink odorless powder. Drug category - Local anesthetics

Properties- Relieve itching

Soo the minor skin irritations of sun burn or irritated skin

3. BENTONITE:-

It is an absorbent very soft clay consisting mainly of montmorillonite. The fine powder is formed when volcanic ash ages.

PROFILE:-



BENTONITE

Description - Off-white montmorillonite clay Category - Absorbent
Properties-Water absorption and viscosity

4. ZINC OXIDE:-

Zinc oxide is an inorganic compound used in several manufacturing processes. It is found in rubbers, plastics, ceramics, glass, cement, lubricants, paints, ointments, adhesives, sealants, pigments, foods, batteries, ferrites, flame retardants and first aid tapes.

DRUG PROFILE:-



ZINC OXIDE

Chemical formula- ZnO

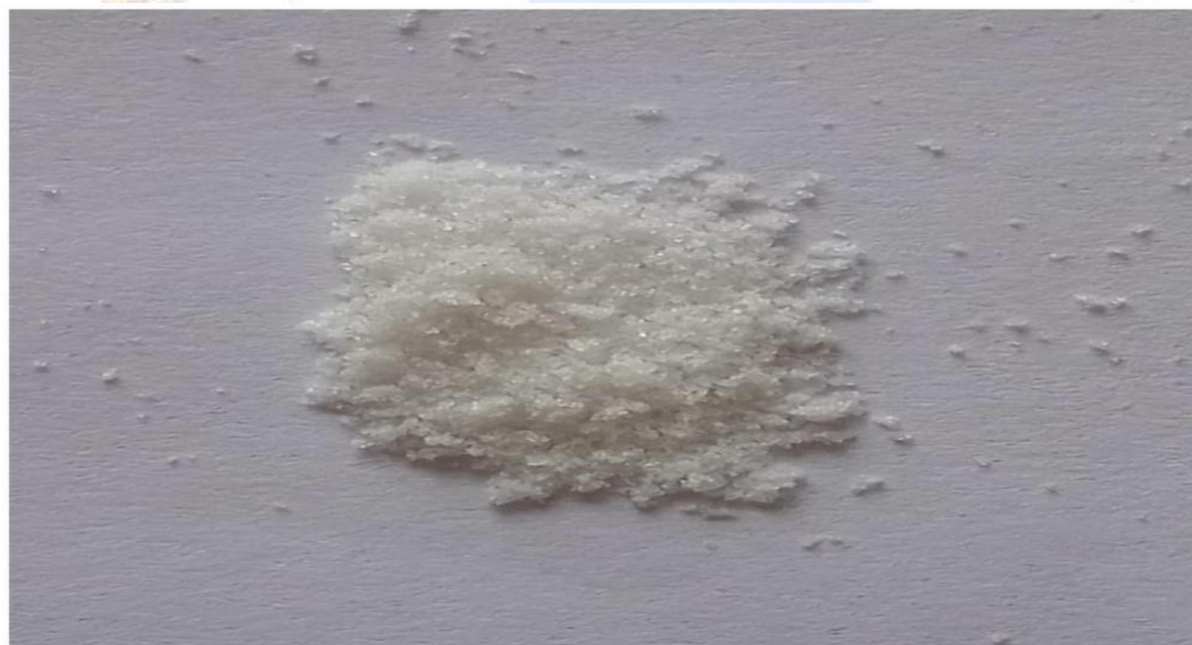
Description - White crystalline powder Drug category - Mineral

Properties - Minor burns, Minor skin irritation, Rectal suppositories are used to treat itching and irritation.

5. SODIUM CITRATE:-

Sodium citrate is the sodium salt of citric acid. It has a sour taste.

DRUG PROFILE:-



SODIUM CITRATE

Chemical formula- $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7$

Description - white crystalline powder

or white granular crystals Drug category - Urine alkalizers Checking the pH level in skin care products

Properties - To control the pH level of skin care products it is used as a preservative.

6. LIQUID PROPETISE PHENOL:-

Clear colorless liquid, otherwise pink or red. Vapors are heavier than air.

Corrosive to skin, but numbs rather than burns due to anesthetic properties. Skin may turn white on contact. May be fatal if absorbed through the skin.

Do not react with water. Stable during normal transport. It is used to make plastics, adhesives and other chemicals.

DRUG PROFILE:-



LIQUID PROPETISE PHENOL

Chemical formula- $\text{C}_6\text{H}_5\text{OH}$

Description - Clear colorless liquid, otherwise pink or red Drug category - Local anesthetics

Properties- Used to make plastics, nylon and medicine.

7. GLYCERIN:-

Glycerin is a natural component obtained from vegetable oils.

DRUG PROFILE:-



GLYCERIN

Molecular formula- $C_3H_8O_3$

Description - Clear, colorless and viscous liquid with a sweet taste
Category Drug - Sweetener and preservatives
Properties- Used as a sweetener

It is used as a thickener It is used as a preservative It is used as a moisturizer, a solvent.

PLAN OF WORK:-

METHODS USED - MORTAR & PESTLE PROCEDURE:-

I.All glassware has been washed and dried.

II.The required amount of chemicals was collected and weighed. SSS

III.Weigh and mix the calamine, zinc oxide and bentonite in a mortar so that the bentonite is well distributed.

IV.Dissolve the sodium citrate in 1000ml of rose water and gradually add to the mixture in a mortar to form a smooth paste.

V.Add liquefied phenol and glycerin and mix well.

VI.Add the aloe vera gel, then mix and mix well.

VII.The preparation was then transferred to a light-resistant container.

VIII.The container has been marked.

TABLE NO.1:- FORMULATION CALAMINE LOTION WITH ALOEVERA GEL. FOR (1000ML)

INGREDIENTS	QUANTITY
1. Calamine powder	150gm
2. Aloe gel + Vitamin E	15gm
3. Zinc oxide	50gm
4. Bentonite	10gm
5. Sodium citrate	5gm
6. Liquid phenol	5gm
7. Glycerin	50gm
8. Purified Water	Q.S to 1000ml

CALCULATION FOR PREPARATION OF CALAMINE LOTION OF 50ML:-

1. Calamine powder = $150 \times \frac{50}{1000}$

$1000 = 7.5 \text{ gm}$

2. ALOE-VERA GEL + Vitamin E = $x \times \frac{50}{1000}$

$1000 = 0.75 \text{ gm}$

3. ZINC OXIDE = $s \times \frac{50}{1000}$

$1000 \times \frac{50}{1000}$

2.5 gm

4. BENTONITE = $10 \times \frac{50}{1000}$

1.5 gm

5. Sodium Citrate = $s \times \frac{50}{1000}$

1000

0.25 gm

6. liquid phenol = $x \times \frac{50}{1000}$

1000

0.25 ml

7. Cerine GI = $x \times \frac{50}{1000}$

1000

2.5 ml

IDENTIFICATION TEST:-

1. Identification tests for calamine:

A. To 2 ml, add 2 ml of periodic acid reagent, shake, centrifuge, and add 0.5 ml of the supernatant to 2 ml of ammonium silver nitrate solution in a test tube; a silver mirror is produced on the walls of the tube.

B. Mix 2 ml with 50 ml of water, centrifuge and decant the supernatant. The residue is suspended in 20 ml of water, 1 ml of hydrochloric acid is added, mixed and filtered. 5 ml of the filtrate after neutralization by dropwise addition of

2M sodium hydroxide gives the reaction of zinc salts.

CALAMINE IDENTIFICATION TEST:-



II. Identification tests for aloe gel:

Borax Test: Take 10 ml of aloe solution and add 0.5 g of borax to it and heat; a green-colored fluorescence is produced indicating the presence of aloemodin anthranol.

Bromine test: To 5 ml of aloe solution add an equal volume of bromine solution; a bulky yellow precipitate is formed due to the presence of tetrabromoaloin.

SOLUBILITY TEST:-

1. Calamine: Practically insoluble in water; soluble with pearling in mineral acids.

II. Aloe gel: Aloe vera is a desert plant that contains about 95% water, which would evaporate in no time without a proper waterproof container.

The gel is where aloe vera stores 95% of its water and water-soluble nutrients (eg water-soluble vitamins).

The bark is a barrier that prevents the gel (water) from Aloe vera from evaporating, so of course the bark is not water-soluble, but lipid-based. So that's where its fat-soluble nutrients (eg fat-soluble nutrients) reside.

SKIN IRRITATION TEST:-



2 ml of the preparation was taken, applied first to the skin of the hand and then to the back of the ear.

Does not cause any skin irritation after 30 minutes.

ADVANTAGES OF CALAMINE LOTION:-

When applied to the skin, the water component of calamine water evaporates. The heat required for evaporation is taken from the body, providing a cooling effect at the application site.

This gives the lotion its soothing and anti-itch effect.

The powder added to the lotion increases the evaporation surface. As a result, the lotion effectively dries and cools wet and weeping skin

It is suitable for application on large surfaces due to its ability to spread easily and evenly.

Calamine lotion allows the passage of a certain amount of secretions and exudations.

It is often a popular product in the treatment of children and is considered safe in infants. However, a product containing phenol should be avoided in infants.

DISADVANTAGES OF CALAMINE LOTION:-

Drying effect on the skin.

Some patients and some parts of the body (calamine cream becomes grainy in moist intertriginous areas) do not tolerate the cream.

The powder component may agglomerate and become abrasive upon evaporation of water, and therefore patients should be instructed to remove residual particles before reapplication.

The pink color may be cosmetically unacceptable for daily use, especially on exposed skin.

Calamine lotion only has a superficial effect because it does not penetrate the deeper layers of the skin, reducing its effectiveness as a treatment modality.

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