Formulation and Evaluation of Anti-Psoriatic Ointment

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ABSTRACT

Psoriasis is inflammatory condition associated with painful, itchy, scaly skin and disfiguration skin lesion. It is an autoimmune disease appear on skin. Immune system play an important role in psoriasis. The lack possible cure and associate disadvantages in allopathic medicines. The chaulmoogra (Hydnocarpus anthelmintic) was found to be natural efficacious and cheap anti psoriatic and anti-inflammatory action in several skin diseases. Also salicylic acid more effective anti-inflammatory and Antipsoriatic activity with least side effect as compare to another anti-inflammatory drugs. The presented work is to formulate and evaluate the anti-psoriatic ointment of chaulmoogra oil. And other natural excipients such as castor oil, Mentha oil, aloe Vera used to minimize side effect and show soothing, cooling, protective, emollientetc. effects on the affected skin and Neem oil shows antibacterial activity on infected skin. The formulation of ointment was done by incorporating oily and Aq. Phase by the fusion method. After completion of formulation it was evaluated for antibacterial(both gram-positive and gram negative bacteria) and antifungal study by using cup plate method and physicochemical parameter like colour, odour, PH, spreadability, solubility, washabiliy, skin irritancy test etc. Thus, the result indicate that an effective herbal formulation containing chaulmoogra oil to be prepared to overcome symptoms occur due to psoriasis and side effect of synthetic drugs.

KEYWORDS: Psoriasis, Anti-psoriatic drug, chaulmoogra oil etc.

INTRODUCTOIN

Ointments are semisolid systems which usually behave as viscoelastic materials when shear stress is applied. They generally contain medicaments and are intended to be applied externally to the body or to the mucous membrane. Non-medicated ointments commonly referred to as ointment bases meant for the preparation of medicated ointments or used as such for emollient or lubricating effects. In prescription practice, various other terms are also used as such for emollient used to designate several variation i.e. creams, pastes, cerates [9], [10]. Many medicaments meant for topical application to intact or broken skin or to mucous membranes, have been presented in the form of semisolid consistency variously designated as ointment, creams, salves, pastes etc and used mainly as protective or emollient for the skin. Modern day ointments too serve the purpose but they also carry the medicaments to the blood stream. Accordingly they are known as

a) Epidermatic-Meant for action on epidermis.

b) Endodermatic-meant for action on deeper layers of cutaneous tissues.

c) Diadermic-Meant to penetrate deep and release medicaments in body fluids (systemic circulation) [11].

All ointments consist of a base which chiefly acts as a carrier for the medicaments. The nature of the base also controls its performance. Hence selection of ointment base is very important aspect of their formulation. For scientific understanding of percutaneous absorption of ointment bases it is essential to get familiar with skin structure in relation to drug absorption [12].

Herbal drugs are also formulated in the form of ointment. The ointment base is prepared and the ointment is formulated by incorporating the active ingredients in the base at most effective ratio by trituration. After the completion of formulation, quality of the ointment is assessed in terms of irritancy, spreadability, diffusion and stability. Traditional medicine is an important source of potentially useful new compounds for the development of chemotherapeutic agents. The first step towards this goal is the screening of plants used in popular medicine. Along with other dosage forms, herbal drugs are also formulated in the form of ointment. An ointment is a viscous semisolid preparation used topically on a variety of body surfaces. These include the skin and the mucus membranes of eye, vagina, anus, and nose. An ointment may or may not be medicated. Medicated ointments contain a medicament dissolved, suspended or emulsified in the base. Ointments are used topically for several purposes, e.g. as protestants, antiseptics, emollients, antipruritic,keratolytics and astringents [13],[14].

Characteristics of an ideal ointment

1. It should be physically and chemically stable.

2. The base of ointment should possess no therapeutic action.

3. In ointment base, finely divided active ingredient should be uniformly distributed.

4. The ointment should be sooth and free from grittiness [15].

Advantages of ointment

1. They provide means of site specific application of drug on affected area, which avoids unnecessary non target exposure of drug thereby avoiding side effects.

2. They avoid first pass metabolism of drug.

3. Convenient for unconscious patients having difficulty in oral administration.

4. Comparatively they are chemically more stable and easy to handle than liquid dosage forms.

5. They are suitable dosage forms for bitter taste drugs [16].

Disadvantages of ointments

1. These oily semisolid preparations are staining and cosmetically less aesthetic.

2. Application with finger tip may contaminate the formulation or cause irritation when applied.

3. As compared to solid dosage forms, semisolid preparations are bulky to handle.

4. Though semisolids allow more flexibility in dose, dose accuracy is determined by uniformity in the quantity to be applied.

5. Physico-chemically less stable than solid dosage forms [16].

Ointment are prepared by different methods some method are listed as follows:-

1. fusion method
2. Trituration method
3. Chemical reaction method
4. Emulsification method

PSORIASIS DISEASE:

Psoriasis is a skin disease that causes scaling and inflammation (pain, swelling, heat, and redness) causing patches of thick, red skin with silvery scales. These patches can itch or feel sore. The immune system plays a key role in psoriasis. The immune system makes white blood cells that protect the body from infection. In psoriasis, the T cells (a type of white blood cell) abnormally trigger inflammation in the skin. They also cause skin cells to grow faster than normal and to pile up in raised patches on the outer surface of the skin.[18] Normally, skin cells that are formed in the deepest layers of human skin make their way to the surface. This process is called cell turnover. They mature, are sloughed off the body's surface, and are replaced with new skin cells from below. This cycle takes approximately a month. In people with psoriasis; however, the immune system activates a faster-than-normal skin cell cycle. The body does not shed these excess skin cells, leading to the cells pile up on the surface of the

skin and lesions form. The lack of possible cure and associated disadvantages in allopathic medicines has led to an extensive research in natural products with anti-psoriatic activity. The literature survey reveals that although extensive work has been reported on the treatment of psoriasis[19], a limited research has been carried out on the herbal drugs in the area of psoriasis. CHAULMOGRA OIL were found to be efficacious and cheap anti-psoriatic and anti-inflammatory drugs with least side effects as compared to the synthetic drugs used in the treatment of Psoriasis.

There are five official types of psoriasis as follow

1. Plaque
2. Guttate
3. Invers
4. Erythrodermic
5. Psoriatic arthritis

INRODUCTION OF CHAULMOOGRA PLANT:-

The world health organization (WHO) defines traditional medicine as the "diverse health practices, approaches, knowledge and beliefs incorporating plant, animal, and or mineral based medicines, spiritual therapies, manual techniques and exercises applied singularly or in combination to maintain well-being , as well as to diagnose, treat or prevent illness.

Scientific classification

- Kingdom-Plantae
- Clade- angiosperm
- Order-malpighiales
- Family-flucourtiaceae
- Genus-Hydnocarpus
- Species-H.Anthelmintic
-

Hydnocarpus wightiana.

Constituents

49% hydnocarpic acid, 27% chaulmoogric acid, 12% gorlic acid, 6.5% oleic acid, 2% palmitic acid etc.

Pharmacological activity

1. Healing of Cute and Bruises
2. Anti-leprotic and anti-tuberculosis activity

Aim and Objective

Aim-"Formulation and Evaluation of anti-psoriatic ointment."

Objective-

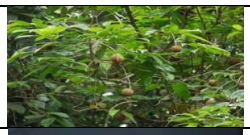
- To prepare formulation of Herbal ointment from chaulmoogra seeds as Antipsoriatic ointment, traditionally used for Leprosy.
- Use of oleaginous and absorption base to prolong the the anti-psoriatic activity of herbal drug.
- Use of these bases dose not produce irritation or sensitization of skin and compatible with the skin and also with incorporated herbal drug.
- To check the antibacterial property of ointment
- As it is herbal preparation it has no or less side effects as compared to Allopathic treatment.
- Different evaluation test for ointment.

MATERIAL AND EQUIPMENT

Collection of Material:

The chaulmoogra oil where collected from Market. The aloe Vera collects from college nursery. Other material such as salicylic acid, castor oil, Neem oil, menthe oil, sodium lauryl sulphate, propylene glycol, Stearyl alcohol and white petrolatum where collected from laboratory.

Table no.1: List of ingredient used in formulation

Sr. No	Materials	Figure	Function	Quantity to be taken 20gm
1.	Chaulmoogra oil		API	2gm
2.	Salicylic acid		Anti- inflammatory	1.2gm
3.	Castor oil		emollient	0.1ml
4.	Neem oil		antibacterial	0.5ml
5.	Mentha oil		Cooling/flavouring agent	0.8ml
6.	Aloe Vera		Skin protective	0.4ml
7.	Sodium lauryl sulphate		Detergent/ surfactant	0.15gm
8.	Propylene glycol		Solubelizer	1.8gm
9.	Stearyl alcohol		Surfactant	3.75gm
10.	White petrolatum		Base	3.75gm

11.	Purified water		vehicle	5.55ml

Procedure for Preparation of Ointment:-

1. Trituration method
2. Weigh accurately oily and Aq. Phase ingredients.
3. Take 3.75 gm. of white petrolatum in china dish and melt it over water bath.
4. To this incorporate 3.37gm Stearyl alcohol, 0.15 lauryl sulphate, 1.8ml propylene glycol stir continuously and add 2ml chaulmoogra, 0.5ml Neem oil, 0.1ml castor oil and 0.4ml aloe Vera at 70^{o}
5. Simultaneously in Aq. phase ingredient 1.2gm salicylic acid added to 5.55ml of water and boil at same temperature.
6. Above Aq. Phase added to oily phase and mix. Continuously to form homogenous mass.
7. Lastly added perfume (menthe oil) and mix oil
8. Add transfer into suitable container

EVALUATION TESTS:-

1. P^{H}
2. Spread ability
3. Consistency
4. Diffusion test
5. LOD
6. Solubility
7. Wash ability
8. Non- irritancy Test

Antimicrobial and Antifungal activity:-

Antimicrobial and antifungal activity are present in the ointment are allowed to diffuse out into medium and interact in plate ointment with test organism. The resulting zones of inhibitions will be circular as will be a confluent lawn of growth. The diameter of zone of inhibition can be measured in millimeter.

Reagent and requirement-

Nutrient agar plate is prepared by dissolving 2gm of agar, 1gm peptone, 1gm beef extract and 0.5gm NaCl in 100 ml distilled water. Dissolved medium was autoclaved at 15 Ibs. Pressure as 121 dc for 15 min. the autoclave media was mixed well and poured into 3 petridishupto 100 ml while still molten.

Result and discussion

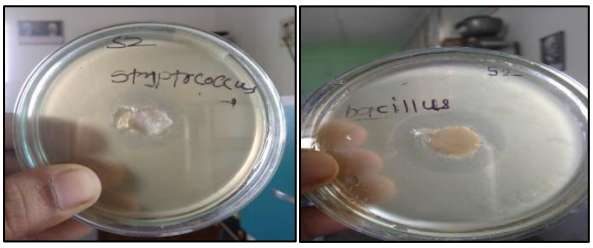
The herbal ointment was formulated using formulated using fusion method. Antipsoriatic ointment was formulated by adding the rewuired amount of base as given in formulation table. This prepared ointment was evaluated for various evaluation tests.

Evaluation test for Ointment

Sr.No.	Evaluation test	Result and Obtained
1.	Colour	White colour
2.	Odour	Mint odour
3.	Consistency	Smooth
4.	PH	4-5 pH
5.	Solubility	Alcohol-Immiscible Chloroform-Miscible Ether- Miscible Boiling Water- soluble
6.	Loss on drying	30%
7.	Wash ability	Good
8.	Non irritancy test	Non irritant
9.	Stability study	It is stable for four weeks at various temperatures.
10.	spread ability	Better Spread ability at 5 seconds.

Antibacterial and antifungal activity of ointment formulation compared with standard ointment (psorolin):-

Agaist Gram positive bacteria:-



Stryptococcus bacteria

Gram negative bacteria:-

E-coli bacteria **pseudomonus bacteria**

Aginst Fungi:-

Aspergillus niger **Against Acne**

Conclusion

An ointment was prepared by using oil of chaulmoogra seeds is used for their various medicinal properties like Antipsoriatic , anti-inflammatory, wound healing, eczema, skin irritation, antileprotic,antibacterial , antifungal etc. activities. The ointment show antibacterial activity against gram positive bacteria like bacillus, streptococcus and in gram negative bacteria like e-coli, pseudomonas. And antifungal activity against various fungi species like aspergilus niger. The advantages of topical is lesser side effects and minimum chances of toxicity. The formulation was found smooth in appearance and have white colour with mint odour the Spreadability was very good and pH is suitable for skin physiology. The result obtained are good and further optimization study required for finding its effectiveness.

Summary

The Chaulmoogra it is medicinal plant. It show many properties like Antipsoriatic, anti-inflammatory, antibacterial, antifungal, used in eczema, rashes, irritation, wound healing property etc. the aim of present study was the preparation of Antipsoriatic ointment by using chaulmoogra oil and evaluation. The antibacterial and antifungal property of chaul moogra and prepared ointment is tested against gram positive and gram negative bacteria fungal species aspergilus niger. The ointment is evaluated for its colour, odour, pH, Spreadability, washability, solubility, consistency, irritancy, diffusion etc.

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