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REVIEW ON OINTMENT

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ABSTRACT:- Ointments are semisolid dosage form which usually act as visco-elastic materials when shear stress is applied. They generally contain medicinal ingredients and are used to be applied externally to the body for therapeutic effect. Many therapeutic agents used for topical application to intact or broken skin or to mucous membranes are presented in the form of semisolid consistency variously designated as ointments, creams, pastes etc. It is used mainly as protective or emollient for the skin. The first step towards the goal is screening of plants used in popular medicine. Along with other dosage forms, herbal drugs also used in the form of ointment.

INTRODUCTION- Pharmaceutical semi-solid dosage form include - ointments, gels, pastes, cream, plasters and foams. They contain one or more active ingredient dissolved or uniformly dispersed in a suitable base and any suitable excipients such as emulsifier, viscosity increasing agents and microbial agents and anti microbial agents antioxidants or stabilizing agent etc. Semisolid dosage form is a topical dosage form used for the therapeutic protective or cosmetic functions they may be applied to the skin or used nasally, vaginally, rectally.

- **Advantages of semi - solid dosage form**
- It is used externally
- Probability of side effect can be reduce
- First pass gut and hepatic metabolism is avoided
- Convenient for comatose patients or patient having difficulty on oral administration
- Convenient dosage form for bitter drugs
- More stable than liquid dosage form.

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Disadvantages of semi - solid dosage form.

- There is no dosage accuracy in semi solid dosage forms.
- The base which is used in the semisolid dosage form can be easily oxidized
- May cause staining
- They are bulky to handle
- Application with finger may cause contamination
- Physico - chemically less stable than solid dosage form
- May cause irritation or allergy to some patient.

Bases used in semi-solid dosage form

• Hydrocarbon bases (oleaginous bases)

Paraffin, Lanolin

• Absorption bases

Cold cream, anhydrous lanolin

• Water removal bases

Oil in water

• Water soluble bases

- Polyethylene glycol.

Antioxidant used in semi - solid dosage form

- Butylated hydroxyl anisole
- Butylated hydroxy toluence

Permeation Enhancers- - oleic acid

Emulsifier

Emulsifying agent –

sodium lauryl sulfate (o/w emulsion)

Sodium stearate and calcium stearate

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Glyceryl monostearate - weak w/o emulsifying agent

• Humectant is also used

Buffers - sodium acetate –

-sodium citrate

Antimicrobial Preservatives

- Parabens, phenols, benzoic acid, sorbic acid

Preformulation study

The main objective of study was to prepare mefenamic acid and peppermint oil ointment. To prepare ointment we used incorporation method, there is also fusion method for prepare ointment. In preformulation study there is three steps.

- Identification of drug
- Drug and excipients
- Characterization of herbal substance

For the preparation of ointments. An ointment should be:

(a) Uniform throughout i.e. it does not contains lumps of high melting point ingredients of base, there is no tendency for liquid substance to separate insoluble powders are evenly dispersed.

(b) Free from grittiness, i.e. insoluble powders are finely divided and large mass of particles are absent. Methods of preparation must be clear these criteria. Two mixing techniques are commonly used in making ointments:

• Fusion, in which ingredients are melted together and for ensure homogeneity stirred is done. Fusion method is not used frequently.

• Trituration, in which finely subdivided insoluble medicaments are evenly distributed by grinding with a small amount of base also used or one of its ingredients followed by dilution with gradually increase amounts of the base.

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Preparation of Ointments by Fusion Method:

When associate degree ointment base contains many solid ingredients like white beeswax, cetyl alcohol, stearyl alcohol, saturated fatty acid, exhausting paraffin, etc. as elements of the bottom, it's needed to soften them.

The melting are often tired 2 methods:

Method-I

The elements square measure dissolved within the decreasing order of their temperature i.e. the upper m.p. substance ought to be dissolved 1st, the substances with ensuing temperature so on. The drug is extra slowly within the dissolved ingredients and stirred totally till the mass cools down and a same product is made.

Advantage:

This will avoid over-heating of gear having a coffee temperature.

Method – 1

All the elements square measure taken in a very divided state and dissolved along.

Advantage:

The maximum temperature reached is less than Method-I, and fewer time was taken presumably thanks to the solvent action of the lower temperature substances on the remainder of the ingredients.

Caution:

(i) Melting time is shortened by grating waxy elements (i.e. beeswax, wool alcohols, hard-paraffin, higher fatty alcohols and emulsifying waxes) by stirring throughout melting and by

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lowering the dish as way as doable into the water tub so the most expanse is heated. (ii) The surface of some ingredients discolours thanks to chemical reaction e.g. wool fats and wool alcohols and these stained layers ought to be removed before use. (iii) when melting, the ingredients ought to be stirred till the ointment is cool, taking care to not cause localized cooling, e.g. by employing a cold spatula or stirrer, putting the dish on a chilly surface (e.g. a plastic benchtop) or transferring to a chilly instrumentality before the ointment

(iv) Vigorous-stirring, when the ointment has begun to thicken, causes excessive aeration and will be avoided. has absolutely set.

(v) thanks to their greasy nature, several constituents of ointment bases develop dirt throughout storage, which may be seen when melting. This can be far from the soften by permitting it to sediment and decanting the supernatant, or by passage through cloth supported by a heat filter. In each instances, the processed liquid is collected in another hot basin.

(vi) If the merchandise is granular when cooling, thanks to separation of high M.P. constituents, it ought to be remelted, exploitation the minimum of warmth, and once more stirred and cooled.

Preparation of Ointments by Trituration:

This technique is applicable within the base of a liquid gift during a touch.

(i) Solids are finely fine-grained are gone through a sieve (# 250, # 180, #125).

(ii) The powder is taken on Associate in Nursing ointment-slab and triturated with a tiny low quantity of the bottom. A steel spatula with a protracted, broad blade is employed. to the

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current extra quantities of the bottom ar incorporated and triturated till the medication is mixed with the bottom.

(iii) Finally, liquid ingredients ar incorporated. To avoid loss from splashing, a tiny low volume of liquid is poured into a depression within the ointment and totally. Incorporated before a lot of is additional within the same approach. Splashing is a lot of simply controlled during a mortar than on a tile.

Evaluation test for ointment

The mechanical evaluation parameters like pH, viscosity, spreadability, homogeneity are important tests to evaluate medicinal ointment formulations. The result of all the formulations near to pH 6.8±1 indicates better chemical compatibility of ointments with skin. Some important parameters are –

- Test of rate of absorption—

The ointment should be evaluated for the rate of absorption of drugs into the blood stream in vivo only. The ointment should be applied over a infected area of the skin by rubbing. At regular interval of time serum and urine sample should be analyzed for the quantity of drug absorbed

- Test of non-irritancy—

The bases used in the formulation of ointment may cause irritation or allergic reaction. Non irritancy of preparation is determine by patch test. In this test human volunteers are selected. Definite quantity of ointment is applied under occlusion daily on the back or volar fore arm for some time period. Information is noted on daily basis.

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- Test of rate of penetration—

The rate of penetration of semi solid dosage form is crucial in the onset and duration of action of the drug. Weighed the quantity and applied over the skin for a definite period of time. Then the preparation left over is collected and weighed. The difference between the initial and the final weight and the final weight of the preparation gives the amount of preparation penetrated through the skin and this when divided by the area and the time period of application give the rate of penetration of the preparation. The test should be repeated 2 to 3 times.

- Test of rate of drug release.

  To assess the rate of release of medicament small amount of the ointment can be placed on the surface of nutrient agar contain in a petri dish or alternately in a small cup in the agar surface. If the medicament is bactericidal the agar plate is previously seeded with a suitable organism like staphylococcus aureus. After a suitable period of incubation the zone of inhibition is measured and correlated with the rate of release.

- Test of rheological properties.

  The viscosity of the preparation should be such that the product can be easily optimal from the container and easily applied over the skin. Using cone and plate viscometer the viscosity of the preparation is determine

- Test of content uniformity.

  The net weight of contents of ten filled ointment containers is determined. The result should match each other and with the labeled quantity.

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- Test of preservative efficacy

  Using pour plate technique the number of microorganism initially present in the preparation are determine. Solutions of different samples of preparation are made and mix with tryptone azolectin (TAT) broth separately. All cultures of microorganism are added into each mixture, under aseptic condition. All mixture are incubated .The number of microorganism in each sample are counted on 7^{th}, 14^{th}, 21^{st} and 28^{th} days of inoculation

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