

PHARMACEUTICS-I (BP103T)

UNIT: 5 (Semi-solid dosage forms)

CLASS: 5

TOPIC: OINTMENTS**OINTMENTS**

Ointments are homogenous, translucent, viscous semi-solid preparations, most commonly a greasy, thick oil (oil 80% - water 20%) intended for external application to the skin or mucous membrane. Drug ingredients can be dissolved, emulsified or suspended in the ointment base.

OINTMENTS BASES

- Oleaginous bases or Hydrocarbon bases
- Absorption bases
- Water-miscible bases/removable bases/Emulsifying bases
- Water-soluble bases

Oleaginous bases (hydrocarbon bases)

Oleaginous bases are non-aqueous formulations which provides emollient & protective properties. It is difficult to remove hydrocarbon bases from skin due to their oily nature. E.g. Hard Paraffin, White or Yellow soft paraffin, Liquid paraffin, Mineral oil etc. Absorption bases In the absorption bases contains small amt. of water & they provide relatively less emollient properties than hydrocarbon bases. These bases are generally anhydrous substances which have the property of absorbing considerable qty. of water but still retaining their ointment like consistency.

They have 2 types: 1. non-emulsified bases 2. Water in oil emulsion bases

Non-emulsified bases: Those bases absorb water & aqueous solution producing W/O emulsion. e.g. Wool fat, Wool alcohol, Bees Wax etc..

Water in oil emulsion bases: Those bases have the capability of absorbing more water & have the properties of non- emulsified bases. e.g. Hydrous wool fat (Lanolin)

Water-miscible bases/removable bases/ emulsifying bases These are anhydrous, hydrophilic, absorbs water with low thermal conductivity. It is easy to remove these bases from the skin due to their hydrophilic nature. These are used to form oil in water emulsion for topical applications. They have the same properties as the absorption bases. They are used as emollients, cleansing creams, vehicle for

solid, liquid drugs. e.g. cold cream type, hydrous lanoline, rose water ointment etc. Water soluble bases In that bases does not contain oily substances & are called greaseless bases & completely soluble in water. Those are prepared using mixtures of different molecular weights of polyethylene glycol (Macrogols). PEG are mixture of polycondensation product of ethylene oxide & water. Lower M.W of this polymers (200,400 & 600g/mol) are liquids & the average M.W increases of this polymers changes from liq. To a waxy solid but not greater than 1000g/mol.

CLASSIFICATION OF OINTMENTS

- On the basis of penetration
- On the basis of therapeutic use

ON THE BASIS OF PENETRATION

- Epidermic ointments: These ointments are intended to produce their action on the surface of the skin and produce local effect, they are not absorbed. They act as protectives, antiseptics and parasiticides.
- Endodermic ointments: These ointments are intended to release the medicaments that penetrate into the skin. They are partially absorbed and acts as emollients, stimulants and local irritants.
- Diadermic ointments: These ointments are intended to release the medicaments that pass through the skin and produce systemic effects.

ON THE BASIS OF THERAPEUTIC USE

Antibiotic Ointments e.g bacitracin, Antifungal Ointments e.g Benzoic acid, Anti-inflammatory Ointments e.g fluocinolone acetonide, Antipruritic Ointments e.g benzocaine, Counter-irritant Ointments e.g Methyl salicylate, Antidandruff Ointments e.g. Salicylic acid

METHOD OF PREPARATION

Both on a large and a small scale, ointments are prepared by three general methods:

- Incorporation Method / Trituration Method
- Fusion Method
- Chemical Reaction

The method for a particular preparation depends primarily upon the nature of the ingredients
Incorporation method / trituration method Powders pass out from mesh no. 250 or 180 or 125. Then apply levigation process with small amt. of base. Then add remaining qty. of base. Finally add liquid ingredients & mix well. E.g Whitfield Ointment Fusion method When an ointment base contains a number of solid ingredients such as white bees wax, cetyl alcohol, stearyl alcohol, hard paraffin etc. By

the fusion method, all or some of the components of an ointment are combined by being melted together and cooled with constant stirring until congealed. Naturally, heat-labile substances and any volatile components are added last when the temperature of the mixture is low enough not to cause decomposition or volatilization of the components.

CHEMICAL REACTION

Ointment containing free iodine.

Ointment containing combined iodine

- Ointment containing free iodine: Iodine is slightly soluble in most fats & oil but very readily soluble in conc. Aq. solution of potassium iodide due to formation of molecular complex. E.g. Strong iodine ointment B.Vet.C is used to treat ringworm in cattle. At one time this type ointment used on humans for counter-irritants but they were not popular bec. they remain stain on skin a deep red colour.
- Ointment containing combined iodine: Fixed oils & many vegetable & animal fats absorb iodine which combines with the double bonds of the unsaturated constituents. Oleic acid + iodine = di-iodo stearic acid ® E.g. Non-staining Iodine Ointment BPC

2 MARKS QUESTIONS

1. Define ointment. What are the types of ointments.
2. What are the bases used in ointment preparation?

5 MARKS QUESTIONS

1. Discuss about the types of ointments with examples.

10 MARKS QUESTIONS

1. Define ointment. Classify them. Explain about the bases used in ointments and their method of preparation.