

PHARMACEUTICS-I (BP103T)

UNIT: 5 (Semi-solid dosage forms)

CLASS: 6

TOPIC: PASTE, CREAMS, GELS**Pastes**

Pastes are homogeneous semisolid dosage form contains high conc. of insoluble powder substance (not less than 20%) dispersed in the suitable base. The paste are usually less greasy, more absorptive & stiffer than ointments. They have good adhesion on skin.

Fusion method

Powder ingredients pass through under mesh no.180. Melt all bases & wax with conti. Stirring. Then add powder form ingredient. And again, continuous or constant stirring until cool. E.g zinc & coal tar paste. Use: treatment for eczema

Fusion & trituration method

Pass the powders through mesh no. 180. Then melt the base. Take powder in mortar & triturated with melted base. Triturate until become cool. E.g compound zinc paste BP Use: treatment for eczema & also act as a sun protecting.

CREAMS

Creams are defined as “a semisolid dosage form containing one or more drug substances dissolved or dispersed in a suitable base” Creams are prepared W/O or O/W it depends upon the nature of solids present in the internal phase. It is used as a protectant, for therapeutic purpose & for cosmetic purpose.

TYPES

- Oil in Water (O/W) Cream
- Water in Oil (W/O) Cream

Oil in water (o/w) cream

oil-in-water (O/W) creams which are composed of small droplets of oil dispersed in a continuous phase. More comfortable and cosmetically acceptable as they are less greasy and more easily washed off using water. Emulsifying agents of natural origins (bees wax, wool alcohols, wool fat). Emollient and creamy, white or translucent and stiff. E.g. Vanishing Cream

Water in oil (w/o) cream

Water-in-oil (W/O) creams which are composed of small droplets of water dispersed in a continuous oily phase. More difficult to handle but many drugs which are incorporated into creams are hydrophobic and will be released more readily from a W/O cream than an O/W cream. More moisturizing as they provide an oily barrier which reduces water loss from the stratum corneum, the outermost layer of the skin. e.g. Cold Cream

Formulation method

Preparation of the oil phase: Flake/powder ingredients, sometimes dry blended in advance, are dispersed into mineral oil or silicone oil. Heating may be required to melt some ingredients. Hydration of aqueous phase ingredients: Emulsifiers, thickeners and stabilizers are dispersed into water in a separate vessel. Heating may be required to accelerate hydration.

Forming the Emulsion: The two phases are blended under vigorous agitation to form the emulsion. Dispersion of the Active Ingredient: The active ingredient often makes up only a small proportion of the formulation; this must be efficiently dispersed to maximize yield and product effectiveness.

GELS

Gels are semisolid dosage form. In that dispersion of small or large molecules in an aqueous liquid vehicle. They produce jelly like consistency by the addition of a gelling agent. Gels are formed by using synthetic polymers such as carbomer 934 & cellulose such as hydroxypropyl cellulose & hydroxypropyl-methyl-cellulose. Tragacanth, pectin, agar natural gums are used in the formulation of gels. As per NF, six polymers are used for gel formulation. Those are followings, Carbomers 910, Carbomer 934, Carbomer 934P, Carbomer 940, Carbomer 941 And Carbomer 1342. Carbomer 940 produce highest viscosity betw. 40,000 & 60,000 centipoises in 0.5% aq. Solution.

Classification of gels

HYDROGELS

ORGANOGELES

Hydrogels

A hydrogel is a network of polymer chains that are hydrophilic, sometimes found as a colloidal gel in which water is the dispersion medium. Hydrogels are highly absorbent (they can contain over 90% water) natural or synthetic polymeric networks. Hydrogels also possess a degree of flexibility very similar to natural tissue, due to their significant water content. Common ingredients include polyvinyl alcohol, sodium polyacrylate, acrylate polymers and

USES: As environment sensitivity detector. Sustained release DDS. Contact lenses. ECG medical electrode. Glue

Organogels

An organogel is a non-crystalline, non-glassy thermo reversible (thermoplastic) solid material composed of a liquid organic phase entrapped in a three-dimensionally cross-linked network. The liquid can be, for example, an organic solvent, mineral oil, or vegetable oil. These systems are based on self-assembly of the structuring molecules.

Method of formulation

There are 3 methods:

Fusion Method

Cold Method

Dispersion Method

Fusion method: In this method various waxy materials employed as gellant in non-polar media. Drug was added when waxy materials melted by fusion. Stirred slowly until uniform gel formed.

Cold method: Water was cooled to 4-100 c and placed it in mixing container. Gelling agent was slowly added and agitating until solution is complete. Maintained temperature below 100 c. Drug was added in solution form slowly with gentle mixing. Immediately transfer to container & allow to warm to R.T where upon liquid becomes clear gel.

Dispersion method: Gelling agent was dispersed in water with stirring at 1200 rpm for 30 min. Drug was dissolved in non-aqueous solvent with preservative. This solution was added in above gel with continuous stirring.

2 MARKS QUESTIONS

1. Define cream and mention its types.
2. Define paste.
3. Define gel and mention its types.

5 MARKS QUESTIONS

1. Define cream. Give me the method of preparation.
2. Define gel. Give me the method of preparation.