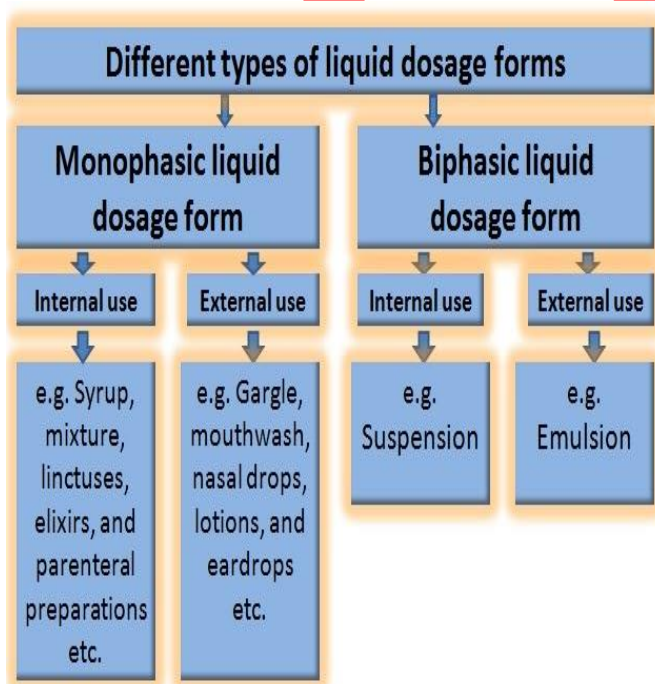


PHARMACEUTICS -1 (BP 103)**UNIT:3 Monophasic liquid dosage forms**

CLASS:1

TOPIC: Monophasic liquid dosage forms**Monophasic liquids**

- Monophasic liquid dosage form refers to liquid preparation in which there is only one phase
- It is represented by true solution
- A true solution is a clear homogenous mixture that is prepared by dissolving a solid, liquid or gas in a liquid.
- The component of solution present in large amount is known as 'solvent' and the component present in small amount is known as 'solute'.

**LIQUIDS MEANT FOR INTERNAL ADMINISTRATION****MIXTURE****INTRODUCTION**

- A mixture is a liquid preparation meant for oral administration in which medicament or medicaments are dissolved or suspended in a suitable vehicle.
- Generally, several doses are dispensed in a bottle. In case, a bottle contains one dose, it is called draught.
- So the mixtures should be extemporaneously prepared and supplied only for a small number of doses which can be used up within a short period.
- In case further need arises, then a fresh mixture is prepared for the patient

Mixtures are classified into:-

- (1) Simple mixtures containing soluble substances
- (2) Mixtures containing diffusible solids
- (3) Mixtures containing indiffusible solids
- (4) Mixtures containing precipitates forming liquids
- (5) Mixtures containing slightly soluble liquids

Simple mixtures containing soluble substances: Simple mixtures contain only soluble ingredients e.g., carminative mixture, diarrhoea mixture and expectorant mixture.

Example- Prepare and dispense 90 ml of the following mixture.

Potassium bromide - 4.0 g

Tincture nux vomica 4.0 ml

Chloroform water - add up to 90 ml

Prepare a mixture

METHOD OF PREPARATION:

Dissolve potassium bromide in 3/4th of chloroform water.

↓

Filter the solution to remove foreign particles.

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Add tincture nux vomica.

↓

Incorporate more of chloroform water to make required volume.

↓

Transfer the mixture to a bottle.

↓

Cork, label and dispense.

SYRUPS

INTRODUCTION

- The syrup is a saturated or concentrated, viscous aqueous solution of sucrose/sugar substitute with or without flavor/medicinal substances in purified water.
- Simple syrup contain 85% w/v (65% w/w); specific gravity 1.313 (USP) or 66.7% w/w as per Indian Pharmacopeia/BP.

FORMULATION OF SYRUP

✓ Most syrups contain the following components(Adjuncts) in addition to the purified water and drug :-

- (a) Sugar, usually sucrose or other sugar substitutes are used to provide sweetness and viscosity, (Sugar-free alternative- Sorbitol, Saccharine, Aspartame)
- (b) Antimicrobial preservatives
- (c) Flavorants & Colorants
- (d) Syrups may also contain solubilizing agents, thickeners.

Advantages of Syrups:

- (1) Syrup retards oxidation because it is partly hydrolyzed into reducing sugars such as, laevulose and dextrose.
- (2) It prevents decomposition of many vegetable substances. Syrups have high osmotic pressure which prevents growth of bacteria, fungi and moulds
- (3) They are palatable. Due to sweetness of sugar

TYPES OF SYRUP

- Simple Syrup
- Medicated Syrups
- Flavored Syrups

SIMPLE SYRUPS

- It's a basic combination of sugar and water.
- Simple syrup offers an easy way to add sweetness to a cocktail without having to dissolve granular sugar in the glass.

► MEDICATED SYRUPS

- A liquid preparation of medicinal or flavoring substances in a concentrated aqueous solution of a sugar, usually sucrose; when the syrup contains a medicinal substance, it is termed a medicated syrup.

► FLAVORED SYRUPS

- Flavored syrups typically consist of a simple syrup, that is sugar, with naturally occurring or artificial flavorings also dissolved in them.
- A sugar substitute may also be used.

PREPARATION METHODS OF SYRUPS

- ✓ Solution with Heat
- ✓ Agitation without Heat
- ✓ Addition of Medicating or Flavouring Liquid to Syrup
- ✓ Percolation

PREPARATION METHODS OF SYRUPS

Solution with Heat

- This method is a suitable preparation method, if the constituents are not volatile or degraded by heat. Purified water is heated to 80-85°C, and then removed from its heat source. Sucrose is added with vigorous agitation.
- Then, other required heat-stable components are added to the hot syrup, the mixture is allowed to cool, and its volume is adjusted to the proper level by the addition of purified water.
- In instances in which heat-labile agents or volatile substances, such as flavors and alcohol, are added, they are incorporated into the syrup after cooling to room temperature.

Agitation without Heat

This method is used for the preparation of syrups containing volatile substances. In this process active substance is added in solution & agitated in glass-stoppered bottle. This method involves these steps :-

- Sucrose and other ingredients are weighed properly.
- Dissolved in purified water.

- Kept in a bottle of about twice the volume of syrup followed by continuous agitation.
 - Prepared syrup volume is made up to q.s.
- Addition of Medicating or Flavouring Liquid to Syrup
- This method is used when fluid extracts, tinctures, or other liquids are to be added to syrup. Alcohol is added to dissolve the resinous or oily substances. Alcohol acts as a preservative also.

➤ **Percolation Method**

- The process in which a comminuted drug is extracted of its soluble constituents by slow passage of suitable solvent through a column of drug.
- Sucrose is placed in percolator.
- Water is passed through sucrose slowly.
- The neck of the percolator is packed with cotton.
- The rate of percolation regulates rate of dissolution.
- After complete dissolution, final volume is made.

ELIXIRS

INTRODUCTION

- An elixir is a sweet liquid used for medical purposes, to be taken orally and intended to cure one's illness.
- When used as a pharmaceutical preparation, an elixir contains at least one active ingredient designed to be taken orally.
- Elixirs contain 4-40% of alcohol (ethanol).
- They may contain glycerin & syrup for increasing solubility of medicament/for sweetening purposes.
- Elixirs may also contain suitable flavoring & coloring agents.
- Preservatives are not needed in elixirs as alcohol content is sufficient to act as

FORMULATION OF ELIXIR

1. Vehicles: The elixirs are usually prepared by using water, alcohol, glycerin, sorbitol, and propylene glycol. Certain oils are easily soluble in alcohol where alcohol is used as cosolvent. 30-40% of alcohol may be used to make a clear solution.

2. Adjuncts

(a) Chemical stabilizer: The various chemicals or special solvents are used in many elixirs to make suitable elixir. E.g. For neomycin elixir - citric acid is added to adjust pH.

(b) Colouring agent: Amaranth, compound tartrazine dyes are used for colouring purpose.

(c) Flavouring agent: Black current syrup, raspberry syrup, lemon syrup etc.

(d) Preservatives: Alcohol 20% or more propylene glycol or glycerol as a vehicle is used as preservative. Chloroform desirable strength, benzoic acid may also be used

2 METHODS OF PREPARATION

- Alcohol soluble and water soluble components are generally dissolved separately in alcohol and water.
- Aqueous solution is added to the alcoholic solution, so minimal separation of alcohol soluble components occurs.
- Mixture is made up to the volume by the specific solvent or vehicle.
- Talc to remove excess amount of oil.
- Filter the preparation.
- Pour it in clean bottle.
- Label the bottle.

LINCTUSES

INTRODUCTION

Linctuses are viscous, liquid and oral preparations that are generally prescribed for the relief of cough. They contain medicaments which have demulcent, sedative or expectorant action. Linctuses should be taken in small doses, sipped and swallowed slowly without diluting it with water in order to have the maximum and prolonged effect of medicaments

AROMATIC WATERS

Aromatic waters are the clear saturated solution of volatile oil or volatile substances in purified water. They are also known as medicated water e.g. Camphor water, concentrated Peppermint water.

METHODS OF PREPARATION

Distillation

- In this method, crude drug containing volatile oil is subjected to distillation.
- The distillate is collected in the receiver.
- The distillate collected have two layers; the upper layer is of volatile oil and lower layer is separated and on clarification, clear aromatic water is produced.

Simple solution method-

- The volatile oil or volatile substance is dissolved in purified water by shaking in order to convert volatile oil into small oil globules

Dilution method:

- In this method, concentrated water is diluted with purified water
- The concentrated waters are alcoholic solution of volatile oil and volatile substances
- These are 40 times stronger than simple aromatic waters.

- The aromatic waters are prepared by diluting one volume of concentrated water with thirty nine volume of purified water.
- Many volatile oils consists of aromatic part and non-aromatic parts.
- When alcoholic solution of volatile oil is diluted with water the non aromatic portion gets separated as fine precipitate which interfere with clarity of the aromatic water

LIQUIDS TO BE APPLIED TO THE SKIN

LINIMENTS

- They are liquid or semi-liquid preparations meant for application to unbroken skin by friction or rubbing of skin.
- They may be alcoholic or oily or soapy solutions or emulsions. Alcoholic liniments are used generally for their rubefacient, counterirritant, mildly astringent, and penetrating effects.
- The oily or soapy liniments are milder in their action but are more useful when massage is required.
- Liniments should never be applied to the skin areas that are broken or bruised. E.g. camphor liniment, turpentine liniment.

LOTIONS

- Lotions are liquid or semi-liquid preparations meant for application to unbroken skin without friction.
- They are either dabbed on the skin or applied on a suitable dressing and covered with water proof material to reduce evaporation.
- An evaporating vehicle like alcohol may be used when a cooling effect is desired on application to the skin.
- Lotions generally contain antiseptic, astringent, anaesthetics, germicides, protectives or screening agent for prev prevention or treatment of various skin diseases.
e.g. calamine lotion, hydrocortisone lotion

IMPORTANT QUESTIONS

1. Classify monophasic liquid dosage forms with examples.
2. Define dosage form and classify with examples.