

Unit - 3

Topic - AMonophasic Liquids

① Gargles - Gargles are the aqueous solutions used to prevent or treat throat infections.

They are usually available in the concentrated form with direction for dilution with water before use.

② Mouthwashes - Mouthwashes are the pleasantly flavoured aqueous solutions containing one or more active ingredients for use in contact with mucous membranes of oral cavity, usually after dilution with warm water.

③ Syrups - Syrups are viscous, sweet, concentrated aqueous solutions of sucrose or other sugars.

Sucrose is most commonly used in preparation of syrups but it may be replaced in whole or in part by other sugars such as dextrose.

Expt. No. _____

④ Elixirs -

Elixirs are the clear, pleasantly flavoured oral liquids containing one or more active ingredients dissolved in vehicle. That usually contains high proportion of sucrose or alcohols and may also contain ethanol.

The alcohol content in most elixirs usually varies from 4 to 40%.

⑤ Lotion -

• Lotions are the liquid preparations meant for external application without friction.

• They are applied direct to skin with the help of some absorbent material.

Such as cotton, wool, or gauze soaked in it.

Lotions may be used for the local action as cooling, soothing or protective purposes.

⑥ Throat Paint - Throat paints are the viscous preparations of medicaments for local action in pharynx.

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⑦ Liniments -

- The liniments are liquid or semi-solid preparations meant for the application to the skin.
- The liniments are usually applied to the skin with friction and rubbing of the skin.
- The liniments may be alcoholic or oily solutions or emulsions.

⑧ Nasal drops -

Nasal solutions are aqueous monophasic liquids, rendered isotonic and slightly buffered to maintain pH of 5.5 to 6.5.

⑨ Enemas -

- Enemas are the aqueous or oily solutions, suspension or emulsions of medicaments intended for the rectal administration to cause bowel evacuation or to bring local or systemic therapeutic action.

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Topic - B.Biphasic Liquids (Suspension)

① Suspension - Suspensions are biphasic liquid dosage form of medicament in which finely divided solid particles ranging from 0.5 to 5.0 micron are dispersed in a liquid or semisolid vehicle.

Suspensions are generally taken orally or by parenteral route. They are also used for external applications.

2. Advantages of suspensions -

① Mask the taste - Drugs having unpleasant taste can be masked by adding suitable flavour.

② Bioavailability - Drugs in suspension exhibit a higher rate of bioavailability compared to other drugs.

③ Stability - Suspensions provide stability which is more than other liquid dosage form.

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3. Disadvantages of suspension -

- ① Being liquid dosage form, it needs considerable attention towards preservation against microbial attack.
- ② In the formulation, the sedimentation of solids occasionally gives misunderstanding about the stability of the product.
- ③ Handling during transport is difficult.

4. Classification of Suspensions

It is classified into 4 main classes -

- ① Oral suspension
- ② Parenteral suspension
- ③ Ophthalmic suspension
- ④ Suspension for external use.

① Oral suspension - These suspensions are to be consumed by the patients by oral route.

e.g. Chloramphenicol palmitate suspension.

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Expt. No. _____

Advantage - It is easy to swallow the suspended insoluble medicaments.

Disadvantage - The accuracy of dosage is less reliable as compared to solution.

② Parenteral suspension - The suspension which are administered by parenteral route are called parenteral suspensions.

The concentration of solid particles in the suspension should be between 0.5 - 30%.

③ Ophthalmic suspension - These are not commonly used as compared to eye-drops.

The ophthalmic suspensions should be sterilised and have desired viscosity.

④ Suspensions for external use - These suspensions are meant for the external use.

Example - lotions.

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5. Short note on Flocculated and Deflocculated Suspension -

9. Flocculated Suspension -

- The rate of sedimentation of the particles is high.
- The sediment is easy to redispense on shaking.
- In these suspension, the particles of the dispersed phase aggregate and form a loose network like structure.
- The suspension is not elegant since the particles of the dispersed phase tend to separate from the dispersion medium.
- The sediment formed is loosely packed and does not form a hard cake.
- The aggregated particles settle rapidly due to their size, sediment formed is loose and easily get redispersed.

Expt. No. _____

b. Non-flocculated Suspension -

- The rate of sedimentation of the particles is slow.
- The sediment is difficult to redisperse on shaking.
- In these suspension, the particles of the dispersed phase remain as separate entities.
- The suspension is comparatively elegant because of uniform appearance of the suspension.
- The sediment formed is tightly packed and a hard cake is formed.
- The non-flocculated suspensions are more elegant than flocculated suspensions since the particles remain suspended for a sufficiently long time and give a uniform appearance to the product.

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Topic - C

Emulsion

Definition - Emulsion is biphasic system which consist of two phase, in which one phase is dispersed in the other phase.

The dispersed phase is called as internal phase while other phase is known as external phase.

Example - Milk is a natural example of emulsion.

Advantages of emulsion -

- a. They mask the disagreeable or unpleasant taste. e.g. Laxative, phenolphthalein.
- b. Provide palatability of liquid dosage form.

Disadvantages of emulsion -

- a. Have a short shelf life.
- b. Being thermodynamically heterogenous unstable system they are difficult to prepare.

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Types of emulsions -

- a. Oil in Water emulsions (o/w)
- b. Water in oil emulsions (w/o)

Classification of emulsions -

Emulsions can be classified as follow -

① Classification of emulsions in accordance to the type of emulsifying agent used in the preparation of an emulsion.

- Emulsion containing saponins.
- Emulsion containing starch.
- Emulsion containing natural waxes.
- Emulsion containing gum substitute.
- Emulsion containing various soaps.
- Emulsion containing natural gum.
- Emulsion containing synthetic waxes.

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② Classification of emulsions in accordance to their mode of administration.

- Emulsions for parenteral use
- Emulsions for oral administration.
- Emulsions for rectal use.
- Emulsions for external use.

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* Emulsifying agents / Emulgent

The emulsifying agents reduce the interfacial tension between two phases i.e. oily phase and aqueous phase and thus make them miscible with each other and form a stable emulsion.

Emulsifying agents are also called as emulgents or emulsifiers.

Properties - (i). It should be non-toxic.

(ii). It should be chemically stable.

(iii). It should be compatible with other ingredients of the preparation.

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★ Identification test for the emulsion -

- (A). Conductivity test
- (B). Dilution test
- (C). Fluorescent test
- (D). Direction of Creaming test
- (E). Dye solubility test
- (F). Cobalt Chloride test.

★ Method of preparation of emulsions -

It is prepared by -

- a. Pestle and mortar method
- b. Bottle method
- c. Other method.

(b) Bottle method - Bottle method is used for the preparation of emulsions of volatile and ~~or~~ none viscous oils.

The proportion of oil : water : gum is 2 : 2 : 1.

Procedure - (i) Measure the required quantity of the oil and transfer into a large bottle.

(ii) Add the required quantity of powdered gum acacia.

(iii) Shake the bottle vigorously, until the oil and gum are mixed thoroughly.

(iv) Add the calculated amount of water all at once.

(v) Shake the mixture vigorously to form a primary emulsion.

(vi) Add more of water in small portions with constant agitation to produce the required volume.

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