LIQUIDS DOSAGE FORM

Biphasic Liquids: An Overview
TOTAL TOPICS:

- About Liquid Dosage Form.
- Types Of Liquid Dosage Form.
- Monophasic Liquid And It’s Example.
- Biphasic Liquid And It’s Example.
Liquid Dosage Form:-

- Liquid Dosage Form is one kind of classification of dosage form on the base of physical state.

- Liquid form of a dose of a drug used as a drug or medication intended for administration or consumption.
Preparation Of Liquid Dosage Form:

- **Three Methods** To Prepare Liquid Dosage Form:

1. By **DISSOLVING** The Active Substance In An Aqueous or Non Aqueous.
   - **Example:** (Alcohol, EITHER, GLYCERIN) Solvents.

2. By **SUSPENDING** The Drug In Appropriate medium.

3. By **INCORPORATING** The Drug Substance Into An Oil Or Water Phase.
LDF’s Classification:

LDF is classified into three parts by the phases of the liquids:

1. **MONOPHASIC LIQUID.**

2. **BIPHASIC LIQUID.**
Classification Of liquids:-

- **Monophasic** (homogeneous solutions in which solute and solvent cannot be differentiated)
  - **Internal**
    - Draughts
    - Drops
    - Linctus
    - Syrups
    - Elixirs
    - mixtures
  - **External**
    - Liquids for oral cavities
      - Gargles
      - Mouthwashes
      - Throat paints
      - Glycerites
      - Throat spray
    - Liquids applied on body cavities
      - Douches
      - Enemas
      - Ear drops
      - Nasal drops
      - Inhalants and eye drops
  - **External**
    - Liquids applied on skin
    - Liniments
    - Lotions
    - Collidions
  - **Biphasic**
    - Emulsions
    - Suspensions
MONOPHASIC LIQUIDS:

- As the word ‘MONOPHASIC’ suggest that system contains only one phase no matter components might be minimum 2 or more than 2.

- One phase is the solvent and the other one is the solute. Solute might be one or more than one.

- This is the most simplest form of presenting medication for rapid absorption of the drug.

- They are dispensed for various purposes as shown in section of previous slide.
BIPHASIC LIQUID:

- Biphasic Liquid Dosage Form Contain 2 Phases. This Includes Undissolved Drug And The Solvent System (Vehicle).

- Undissolved Phase Is Distributed Throughout A Vehicle And Intended For Oral Administration.

- In This Preparation This phase Is Called ‘Dispersed phase’ And The Vehicle Is called ‘Dispersed Medium’.

- It’s also Called Internal Phase Or External Phase Respectively.
About Biphasic Liquid:-

- The Need Of Biphasic Liquid Dosage forms Arise When The Medicaments Are Poorly Soluble In the Solvent medium.

- Medicaments From The Dispersed Phase Of The System Which Might Be Either Solid Or Liquid.

- When Solid Medicament Is Distributed in the Dispersion Medium, The System Formed Is Called **SUSPENSION**.

- When Liquid Medicament is Distributed in The Dispersion Medium, The System Formed Is Called **EMULSION**.
About Biphasic Liquid:

- These Two Highly unstable Systems Are made Stable By Employing various Pharmaceutical aids Like; SUSPENDING AGENT, EMULSIFYING AGENT.

- They are Categorised As Coarse Particles, Usually 1 To 100 Microns In Size.

- Dispersion Containing particles Of smaller Size Are called Fine Dispersion And If The Particles Are In the Colloidal Range ( < 1 Micron), They are termed MAGMAS.
Types Of Biphasic Liquid:-

- There Are Two Types Of Biphasic Liquid:-
  1. SUSPENSION
  2. EMULSION

- There Are subcategories In Those Two Types Of Biphasic Liquid:-
  1. SUSPENSIONS Are categorised Into Applications, Enemas, Lotion, Inhalation, Aerosols, Eye Drop.
  2. EMULSIONS Are Categorised Into Application, Liniment, Lotion, Enemas.
SUSPENSION:-

- Heterogeneous biphasic dosage form.
- Solid is dispersed in liquid medium.
- Dispersed phase, dispersion medium.

PROPERTIES:-

1. Rapid settling.
2. Easily redisperdible.
3. Pourable.
4. If parenteral flow through syringe needle.
5. If external spread easily --- Pleasing in colour, odour, appearance.
Physical Features of the Dispersed Phase of a Suspension

- Good pharmaceutical suspensions, the particle diameter is between 1 to 50.

- Particle size reduction is generally accomplished by dry-milling prior to the incorporation of the dispersed phase into the dispersion medium.

- One of the methods of producing fine drug powders of about 10 to 50 um size is micro pulverization.

- For still finer particles, under 10 um, the process of fluid energy grinding, sometimes referred to as jet-milling or micronizing.
Dispersion Medium:

- Suspending agents are added to the dispersion medium to lend its structure to assist in the suspension of the dispersed phase.

- **Examples:**
  1. Carboxymethylcellulose
  2. Methylcellulose
  3. Microcrystalline cellulose
  4. Polyvinyl pyrididone
  5. Xanthan gum Bentonite
EMULSIONS:

- An emulsion is a dispersion in which the dispersed phase is composed of small globules of a liquid distributed throughout a vehicle in which it is immiscible.
Classification of emulsions:-

- Based on dispersed phase Oil in Water (O/W): Oil droplets dispersed in water
  Water in Oil (W/O): Water droplets dispersed in oil.

- Classification of emulsions:

  "Based on size of liquid droplets 0.2 –50 mm Macro emulsions (Kinetically Stable)
  0.01 –0.2 mm Micro emulsions (Thermodynamically Stable)."
General Types of Pharmaceutical Emulsions:

1) Lotions
2) Liniments
3) Creams
4) Ointments
5) Vitamin drop
Theories of Emulsification:

1) Surface Tension Theory: - lowering of interfacial tension.

2) Oriented-Wedge Theory: - mono molecular layers of emulsifying agents are curved around a droplet of the internal phase of the emulsion.

3) Interfacial film theory: - A film of emulsifying agent prevents the contact and coslescing of the dispersed phase.