

# LIQUID DOSAGE FORM



# Liquid dosage forms

Dosage forms are essentially pharmaceutical products in the form which involves a mixture of active drug components and nondrug components (excipients). Liquid form of a dose of a drug used as a drug or medication intended for administration or consumption.

Liquid dosage forms are prepared:

- a. By **dissolving** the active drug substance in an aqueous or non-aqueous (e.g. alcohol, ether, glycerin) solvent,
- b. By **suspending** the drug in appropriate medium, or
- c. By **incorporating** the drug substance into an oil or water phases.

# Advantages of LDF

## Advantages:

- a. Better for patients who have trouble swallowing expiration than other.**
- b. Faster absorption than solids.**
- c. More flexibility in achieving the proper dosage of medication.**
- d. Palatable.**
- e. Best choice for children and old age person.**

# Disadvantages of LDF

- a. Shorter life than other dosage form,
- b. Harder to measure accuracy,
- c. Need special storage condition.
- d. Less stable,
- e. Easily affected by microorganisms,
- f. Bulky to carry around.
- g. Easy to loss by the breakage of the container.
- h. Measuring dose is required.

# Administration of LDF

Liquid dosage forms can be administered:

- a. Topically - lotions or suspension applied to the skin, nasal drops, ear drops, eye solutions.
- b. Orally (p.o.) – oral suspension, emulsion & solution.
- c. Parenterally -
  - subcutaneous injection (s.c.),
  - intramuscular injection (i.m.)
  - intravenous administration (i.v.)

# Types of LDF

**Syrup**  
**Otic Preparation**  
**Collodion**  
**Nasal Preparation**  
**Aromatic Water**  
**Spirit/Essences**  
**Elixir**  
**Mouthwash**

**Tinctures**  
**Gargle**  
**Fluid Extract**  
**Astringent**  
**Douche**  
**Antibacterial**  
**Enema topical solution**  
**Liniment**



# Some familiar LDF

## Syrups:

Syrups are concentrated aqueous preparations of a sugar or sugar substitute with or without flavoring agents and medicinal substances.

## Types of syrup:

### a. Medicated syrups:

Syrups containing flavoring agents with medicinal substances.

### b. Flavored Syrups:

Used as vehicles for unpleasant tasting medications; the result is medicated syrup.

# Syrups

## Advantages of Syrups:

- a. Ability to disguise bad taste of medication.
- b. Thick character of syrup has soothing effect on irritated tissues of throat.
- c. Contain little or no alcohol.
- d. Easy to adjust the dose for a child's weight



# Elixir

Elixirs are clear, sweetened hydro-alcoholic solutions. They are intended for oral use and are usually flavored to enhance palatability. Usually less sweet than syrups and less viscous.

They are classified into two classes,

- a. Non medicated elixirs – vehicles,
- b. Medicated elixir – used for therapeutic effects

# Elixir

## Advantages of Elixirs:

- a. Better able to maintain both water-soluble and alcohol-soluble components in solution.
- b. Has stable characteristics.
- c. Easily prepared by simple solution.

## Disadvantages of Elixirs:

- a. Less effective than syrups in masking taste of medicated substances.
- b. Contains alcohol, accentuates saline taste of bromides

# Tincture

A liquid preparation produced by macerating prepared plant material in a mixture of alcohol and water at room temperature over a prescribed period of time, which is then pressed and filtered to yield a fluid into which active constituents of the herb have dissolved. Made by soaking plant/animal material in alcohol for 72 hrs or so.

Commonly used solvent is ethanol. Other solvent includes Vinegar, Glycerine and Distilled water.

# Otic Preparations

Otic preparations are products that are applied to or in the ear to treat conditions of the external and middle ear. These products are used to treat dermatitis of the ear, cerumen build up and ear infection.

Nasal Preparations are liquid, semi-solid or solid preparations intended for administration to the nasal cavities to obtain a systemic or local effect. These are as far as possible non-irritating and do not adversely affect the functions of the mucosa and its cilia.

# Suspension

A suspension is a heterogenous mixture containing solid particles that are sufficiently large for sedimentation. A suspension consists of a dispersion of relatively coarse particles, usually in aqueous vehicle.

Suspensions may be used for oral and topical administration. Like solutions, oral suspensions are useful in children and patients who cannot tolerate a solid dosage form.



# Emulsion

An emulsion is a mixture of two or more liquids that are normally immiscible. Emulsions are two-phase systems consist of liquid drug substances. They are classified as:

- oil-in-water emulsion (O/W)
- water- in-oil emulsion (W/O)

Emulsions can be administered

- topically, orally, and I.M.



# Liniment

- Liniment also known as embrocation, is a medicated topical preparation for application to the skin. Preparations of this type are also called balm.
- Liniments are of a similar viscosity to lotions (being significantly less viscous than an ointment or cream) but unlike a lotion a liniment is applied with friction; that is, a liniment is always rubbed in.
- Liniments are topically used to relieve pain and stiffness, such as from sore muscles or from arthritis.

# Infusions and decoctions

**Infusion** is a dilute solution of the readily soluble constituents of crude drugs (from the soft parts of plants). Fresh infusions are prepared by macerating the drugs for a short period of time (15 min) with boiling water.

**Decoctions** is an extract of the water-soluble and heat-stable constituents of crude drugs (from the hard parts of plants) by boiling in water for 30 min, and cooling. Infusions and decoctions are of short duration (no more than 3 days).

# Collodion

Collodion is a flammable, syrupy solution of pyroxylin ether and alcohol.

There are two basic types; flexible and non-flexible. The flexible type is often used as a surgical dressing or to hold dressings in place.

When painted on the skin, collodion dries to form a flexible cellulose film. While it is initially colorless, it discolors over time. Non-flexible collodion is often used in theatrical make-up.

These are used as a topical protectant, applied to the skin to close small wounds, abrasions, and cuts, to hold surgical dressings in place, and to keep medications in contact with the skin.

# Additives used in LDF

Additives are used in a liquid dosage form for several reasons:

- a. To protect from the microbes.
- b. To make a stable preparation.
- c. To Improve the organoleptic properties.
- d. For Masking the taste.
- e. To Enlarge the total volume of the preparation.
- f. For dose uniformity.

# Example of additives

- a. Antimicrobial agents,
- b. Buffering agent,
- c. Flavoring agent,
- d. Coloring agent,
- e. Suspending agent,
- f. Emulsifying agent,
- g. Stabilizing agent,
- h. Diluent.
- i. Others.

