

## **01. Liquid oral preparation:**

A liquid oral preparation can be a ready-to-use solution, suspension, or emulsion, or a solid form (powder, granules) that requires reconstitution before use. The preparation is often complex, including active ingredients, a liquid vehicle, and excipients such as preservatives, flavorings, or sweeteners. Adherence to the manufacturer's instructions regarding dilution, storage, and preparation is crucial to ensure efficacy and safety.

### Types of liquid oral preparations

- Oral solutions: Homogeneous and transparent mixtures of one or more active ingredients in a solvent.
- Oral suspensions: Heterogeneous mixtures in which solid particles are dispersed in a liquid medium. They must be shaken well before administration.
- Oral emulsions: Stable mixtures of two immiscible liquids, such as water and oil.
- Syrups: Concentrated solutions in water, often with a high sugar or sweetener content, making them more viscous.
- Oral drops: A concentrated form, often used for young children, which may be ready-to-use or as a powder to be reconstituted.

### Key points for preparation

- Read the package leaflet carefully: Each medication has its own preparation instructions. Some preparations must be made just before administration, while others can be prepared and stored for a limited time.
- Follow the reconstitution instructions: If you are preparing a medication from a powder, add the specified amount of water. Shake the bottle well until you obtain a homogeneous liquid, then let it stand if instructed.
- Label the bottle: It is essential to write the opening date and the expiration date on the bottle, especially for suspensions and antibiotics with a limited shelf life after reconstitution. Follow storage instructions: Store medications in a cool, dark place, out of reach of children.
- Avoid altering the shape: Never cut or crush an extended-release, gastro-resistant, or cancer tablet unless instructed by a doctor or pharmacist.

### Preparation for a child

- Use the correct equipment: Use the provided graduated pipette, a syringe, or a graduated teaspoon to accurately measure the dose.
- Administer carefully: Keep the child sitting or semi-reclined to prevent choking.
- Offer a sip of water: You can give the child a small sip of water beforehand to moisten their mouth.

Patience if necessary: If the child spits up or vomits within 10 to 15 minutes, it is often recommended to administer another dose.

## 2. Parenteral preparations:



Introduction of the medication into the body by breaking the skin tissue using appropriate instruments. The medication and instruments used must be sterile. The medication is deposited inside a tissue or released into the bloodstream via the parenteral route. This is the most direct system for introducing medications into the body. Parenteral route: Parenteral comes from the Greek "para enteron," meaning: bypassing the intestine.

Injectable preparations are sterile solutions, emulsions, or suspensions. They are prepared by dissolving, emulsifying, or dispersing the active ingredients and possibly excipients in water for injection, in a suitable sterile non-aqueous liquid, or in a mixture of these two liquids. Injectable preparations are generally single-dose.

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Injectable preparations are generally single-dose. Injectable solutions, when examined under suitable viewing conditions, are clear and practically free from particles.

Injectable emulsions show no signs of phase separation.

Injectable suspensions may contain sediment, which is easily dispersed by shaking to obtain a suspension sufficiently stable for administration of the intended dose.

Infusion preparations: sterile aqueous solutions or emulsions in the external aqueous phase, normally isotonic with blood. They are primarily intended for administration in large volumes. Preparations for injection or infusion: sterile solutions intended for injection or administration by infusion after dilution. They are diluted to the prescribed volume with a specified liquid before administration.

Powders for injection or infusion: sterile solid substances, dispensed into their final containers; after shaking with the prescribed volume of a specified sterile liquid, they rapidly form a clear solution or a uniform suspension.

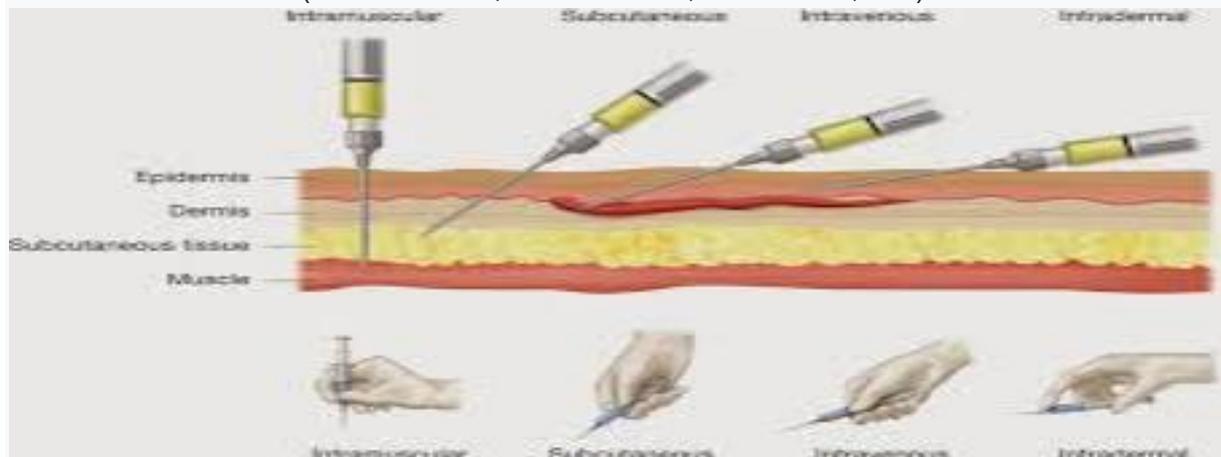
Lyophilized powders for parenteral use are classified in this category. After dilution, these last two categories must meet the requirements for injectable preparations or preparations for intravenous infusion. Injectable gels: their viscosity ensures a modified release of the active substances at the injection site. Implants: sterile solid preparations of a size and shape suitable for parenteral implantation. They ensure the release of active ingredients over an extended period. They are packaged in individual sterile containers.

Routes of administration of injectable preparations: According to their frequency of use:

• Major routes: - Intravenous (IV). - Intramuscular (IM) and Subcutaneous (SC). - Intradermal (ID). • Minor routes: - Intra-arterial. - Intrathecal. - Intra-articular. - Intracardiac... According to the injection site:

• Intravascular routes (intravenous and intra-arterial).

• Extravascular routes (subcutaneous, intramuscular, intradermal, etc.).



#### ADVANTAGES:

1- Rapid action.

2- Complete absorption of the drug (anaphylactic shock, anaphylactic edema).

3- Constriction to a specific area (local anesthesia).

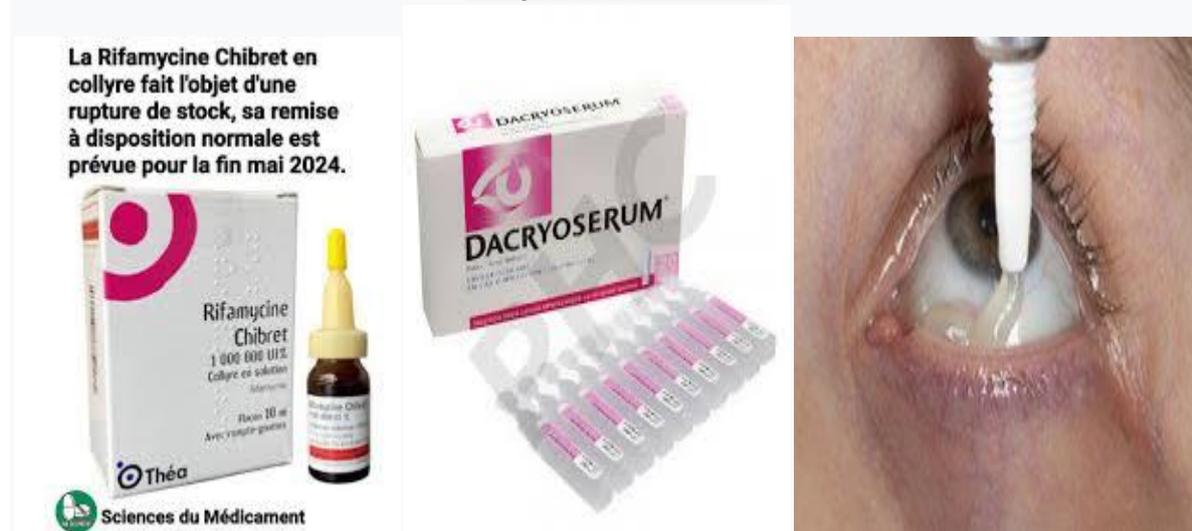
4- Rapid and large-volume delivery of intravenous fluid for tissue rehydration or restoration of blood osmotic pressure.

5- Administration of active ingredients with a short plasma half-life.

6. Inability to use the oral route:

- a. Patients unable or unwilling to swallow medication.
  - b. Patients in whom the medication causes gastrointestinal disturbances.
  - c. Cases of medications that are metabolized in the gastrointestinal tract (insulin, heparin).
7. Side effects of the medication on the digestive system ruled out. 8. Absence of disgust due to taste.

### 3. Ophthalmic Forms:



An ophthalmic form is a sterile pharmaceutical preparation, liquid, semi-solid, or solid, designed for local administration to the eye. It may take the form of eye drops, ointments, or gels, intended for application to the eyeball, the conjunctiva, or the conjunctival sac. These preparations must meet strict criteria of sterility, tolerability, and stability for safe use.

Types of Ophthalmic Forms

- Liquids: Solutions, emulsions, suspensions (eye drops).
- Semi-solids: Ointments and gels.
- Solids: Inserts (devices that slowly release the medication).
- Powders: Forms that must be dissolved in a sterile solvent before administration.

Routes of Administration

- Topical route: Application to the cornea or conjunctiva (most common).
- Subconjunctival route: Injection under the conjunctiva for a high local effect.
- Intraocular route: Injection into the internal structures of the eye, such as the anterior chamber or vitreous humor.