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## Introduction, Classification and Definitions of Dosage Forms

*Learn about classification and definitions of different types of dosage forms with examples.*

### Introduction to Pharmaceutical Dosage Form

Drugs are rarely delivered as pure chemical entities but are approximately usually provided as prepared formulations i.e. dosage form. After converting them into an appropriate dose formulation, they are delivered in several dosage forms.

To create an alternative dosage form, non-medicinal chemicals (also known as pharmaceutical ingredients or excipients) are added. By adding pharmaceutical ingredients that solubilize or suspend or thicken or dilute or emulsify or stabilize or preserve them, drug dosage forms can be made more effective and appealing.

### Definition of Dosage Form

Dosage forms are the mechanism by which drug molecules / APIs are administered to areas of action inside the body to generate maximum intended benefits and the lowest unwanted effects.

OR

The Dosage form is the combination of Active Pharmaceutical Ingredients (API) and Excipients in the formulation.

### Need Of Dosage Forms

Mainly depend on Patient Safety and Drug Safety/ Benefits.

1. Deliver precise dosages in a safe and easy manner. Example – Tablets, capsules, syrups
2. Cover bitter taste or odor of drug substances. Example – Capsules, coated tablets, flavored syrups
3. Insoluble or unstable in the selected vehicle, provide a liquid formulation of the insoluble or unstable medication. Example – Suspension
4. Controlled-release methods prolong the duration of medication effect. Example – Controlled release tablets, capsules, suspensions
5. After oral delivery, a drug substance is protected from stomach acid. Example – Enteric-coated tablets
6. Provide optional drug action from topical administration sites. Example – Ointment, cream, ear and nasal preparations
7. Drugs can be injected into the body's tissues. Example – Implants
8. Inhalation treatment is the most effective way to get optimum medication activity. Example – Inhalants
9. Liquid dosage forms of chemicals soluble in the vehicle of your choice. Example – Solution
10. Provide for the introduction of medication into the body's orifice. Example – Rectal and vaginal suppositories
11. Protection of a drug substance from atmospheric oxygen or moisture. Example – Coated capsules, sealed ampules.

### Definition of Drug (Active Pharmaceutical Ingredients)

Drogue is an old French term that means "dry herb" and is sometimes used interchangeably with the word "drug".

Chemical compounds intended for use in the diagnosis, prevention, treatment, and management of disease(s) in humans and other animals are referred to as "pharmaceutical products" or "pharmaceuticals". Chemical/organic synthesis, molecular modification, and biotechnology have all been used to produce medicines in recent years.

OR

The Active Pharmaceutical Ingredient (API) is the component of a medication that creates its action.

### Definition of Excipients

- Do not increase or affect the therapeutic action of the active components.
- They are also known as inactive components or excipients and have no pharmacological action in general.
- Examples of inactive components are dyes, preservatives, sweetening agents, binding materials, coloring agents and flavoring agents, etc.

### Definitions to Different Dose Form

#### 1. Liquid

- **Droughts:** Liquid oral formulations comprising single or several doses of medication.
- **Elixirs:** Excipients and medicaments in a liquid formulation for oral administration.
- **Emulsions:** Water-based suspension of oils and fats using an emulsifying agent. Emulsifying agent coats oil particles so they do not coalesce when the interfacial tension between oil and water decreases. As a result, an emulsion is created.
- **Suspensions:** One or more active components dispersed in a suitable medium are used in biphasic liquid formulations for oral administration. When shaken, it disperses into a uniform suspension that is stable enough to deliver the precise dosage.
- **Gargles:** Externally applied aqueous solutions that are concentrated for treating throat infections.

- **Gels:** Dispersions of medicaments in water used as antacids.
- **Lotions:** External liquid preparations are generally administered without friction.
- **Liniments:** The application of external liquid preparations is generally done via friction.
- **Mixtures:** One or more medications are included in liquid oral preparations.
- **Mouthwashes:** In a similar manner to gargles, these mouthwashes are used for oral cleanliness and to treat oral infections.
- **Nasal drops:** Dropper-instilled liquid solutions used to treat nose infections and blockages.
- **Solutions:** Liquid medicine that can be used for internal or exterior applications.
- **Syrups:** With or without sugar and medicaments, sweet, viscous, concentrated liquid medicines are made.

## 2. Solid

- **Powders:** Solid dose formulations comprising micron-sized, finely fragmented particles.
- **Tablets:** Medication in solid dose form, either with or without excipients.
- **Granules:** Particles in a group.
- **Capsules:** Gelatin capsules are used to encapsulate drugs.
- **Pills:** Excipients are contained in this small pill.
- **Lozenges:** Sugar and gum-based solid formulations used to treat mouth and throat disorders.
- **Suppositories:** Solid dosage form carrying medication that is put into bodily cavities other than the mouth, such as the rectum, nose, or ear.

## 3. Semisolid

- **Ointments:** Ointment-based semisolid dose forms for external application that include or do not contain medications.
- **Creams:** With or without medicaments, semisolid external dose forms with an appropriate fatty basis are available.
- **Paste:** With an appropriate fat basis, semisolid external dosage forms include a significant proportion of finely powdered medicaments.
- **Gels:** Contains hydrophilic or hydrophobic base and gelling agents. Transparent semisolid dose forms for external usage.

## 4. Gaseous

- **Aerosols:** Dispersion of solid or liquid particles in gas for application to the respiratory tract, using an atomizer.
- **Inhalations:** It consists of pharmaceutical liquid preparations for internal consumption, which are either dispersed or suspended in the propellant.
- **Sprays:** Application of alcohol-containing medication aerosols to the nose or throat using an atomizer or nebulizer.



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