

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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Drug Dosage Forms

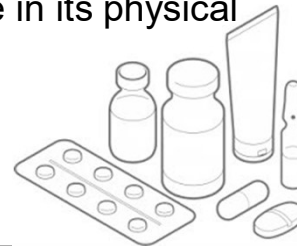
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What is the Dosage Form?

Drug dosage forms

- The **physical** form in which the drug is **available**
- The form by which drug molecules are **delivered** to sites of action within the body
- Each type of dosage form is unique in its physical and pharmaceutical characteristics



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Dosage Forms

Physical form:

- Solid forms
- Semisolid forms
- Liquid forms
- Gaseous dosage forms

Route of administration:

- Oral
- Topical
- Rectal
- Parenteral
- Vaginal
- Inhaled
- Ophthalmic
- Otic

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Dosage Form - 1

Solid dosage forms

- Tablets
- Capsules
- Powders
- Implantate
- Transdermal patches
- Pills
- Suppository

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Solid dosage forms

Tablets

- Conventional (can be divided)
 - ✓ Scored tablet, Double scored tablet
- Coated (can not to be divided)
 - ✓ Enteric coated, Sugar coated, Film coated
- Chewable tablet
- Tablets used in the oral cavity
 - ✓ Buccal, Sublingual, Lozenge
- Tablets used to prepare solution
 - ✓ Effervescent tablet

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Coated tablets

A coating may be applied to:

- Hide the taste of the tablet's components
- Make the tablet smoother and easier to swallow
- Make it more resistant to the environment
- Extending its shelf life

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Solid dosage forms

Capsules

- Hard gelatin capsules
- Soft gelatin capsules

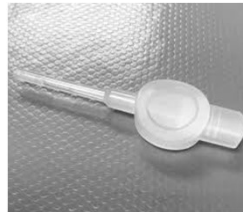
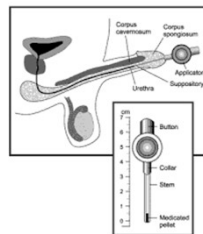


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Solid dosage forms

Suppositories

- Rectal suppositories
- Vaginal suppositories
- Urethral suppositories



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Dosage forms - 2

Semi-solid dosage forms

- Gels
- Creams
- Ointments
- Pastes

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Dosage forms - 3

Liquid dosage forms

- Solutions
- Suspensions
- Emulsions
- Drops
- Enema

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Liquid dosage forms

Solutions

- Syrups
 - ✓ Aqueous solution with sugar or sugar substitute
 - ✓ With/without flavoring agents
- Elixirs
 - ✓ Sweetened hydroalcoholic solution
 - ✓ 5-40% alcohol
- Tinctures
 - ✓ Alcoholic or hydro-alcoholic solution of herbal drugs

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Liquid dosage forms

Suspensions

- Finely divided solid particle in a small liquid solvent
 - ✓ Enhance drug stability and mask an unpleasant taste

Emulsions

- Oil in water or water in oil solution
 - ✓ Increase drug solubility and improve taste
 - ✓ Lotion

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Dosage forms - 4

Gaseous dosage forms

- Gases
- Volatile agents
- Aerosol
 - ✓ Aerosols are liquid or solid particles dispersed in gas
 - ✓ Inhalers
 - ✓ Spray

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Administration of drugs

Routes of drug administration

- Mode of drug administration affects
 - ✓ Onset of action
 - ✓ Duration of action
 - ✓ Drug dose
 - ✓ Therapeutic responses
 - ✓ Side effects
 - ✓ Drug interactions

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Routes of drug administration

Classification

- **Enteral**
 - ✓ Drugs administered along any portion of the gastrointestinal tract
- **Parenteral**

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1- **Enteral** Routes

➤ **Drug placed directly in the GI tract:**

- ✓ Oral
- ✓ Sublingual
- ✓ Buccal
- ✓ Orogastric / Nasogastric
- ✓ Rectal (PR)

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Oral preparations

Advantages:

- Convenient
 - ✓ Self-administered
 - ✓ Pain free
 - ✓ Easy to take
- Absorption
 - ✓ Takes place along the whole length of the GI tract
- Cheap
 - ✓ Compared to most other parenteral routes

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Oral preparations

Disadvantages:

- ✓ Sometimes inefficient
 - Low bioavailability
 - First-pass effect
 - Sensitive to gastric acid and digestive juices
- ✓ Irritation of gastric mucosa
- ✓ Nausea and vomiting
- ✓ Slow onset of action
- ✓ Unpleasant taste of some drugs
- ✓ Unable to use in unconscious patient

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Sublingual/Buccal preparations

Advantages:

- ✓ Rapid absorption
- ✓ Drug stability
- ✓ No first-pass effect

Disadvantages:

- ✓ Inconvenient
- ✓ Small doses
- ✓ Unpleasant taste of some drugs

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Rectal preparations

- Suitable for unconscious patients and children
- Suitable for patients with nausea or vomiting
- Easy to terminate exposure
- Absorption may be variable
- Suitable for drugs affecting the bowel
- Contraindicated for irritating drugs

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2- Parenteral Routes

- | | |
|----------------|----------------------|
| ➤ Topical | ➤ Subcutaneous (SC) |
| ➤ Inhalational | ➤ Intramuscular (IM) |
| ➤ Intradermal | ➤ Intravenous (IV) |
| ➤ Endotracheal | ➤ Intracardiac (IC) |
| ➤ Intranasal | ➤ Intra-articular |
| ➤ Vaginal | ➤ Intraosseous |
| | ➤ Intra-vitreal |
| | ➤ Intrathecal |

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Intravenous (IV) preparations

- ✓ An injection given directly into the blood stream
- ✓ Bypassing the absorption process
- ✓ Provides an almost immediate pharmacological effect
- ✓ Precise, accurate and almost immediate onset of action
- ✓ Large quantities can be given
- ✓ Fairly pain free
- ✓ High concentration attained rapidly
- ✓ Greater risk of adverse effects
- ✓ Risk of embolism

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Intramuscular (IM) preparations

- ✓ An injection given into skeletal muscle
- ✓ More rapid absorption than SC injection
- ✓ Volume of injection depends on muscle type
- ✓ Many vaccines as well as other medications are administered by this route
- ✓ Use for repository and slow release preparations
- ✓ Pain at injection sites for certain drugs

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Subcutaneous (SC) preparations

- ✓ An injection into the connective tissue or fat beneath the dermis
- ✓ Small volumes of irritate drugs can be injected
- ✓ Low and constant absorption
- ✓ Provide a sustained effect
- ✓ Absorption is limited by blood flow
- ✓ Pain at injection sites

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Pulmonary preparations

- ✓ Drugs administered by inhalation for gaseous, volatile agents, and aerosols
- ✓ Absorption in blood stream is rapid:
 - Large surface area
 - Thin membranes separates alveoli from circulation
 - High blood flow
- ✓ Produces primarily local effects but occasionally results in unwanted systemic effects

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Topical preparations

- ✓ Application of drugs to:
 - Mucosal membranes (eye, ear, nose, etc.)
 - Skin
- ✓ Dermal: rubbing in of oil or ointment
 - Designed for local action
- ✓ Trans-dermal: absorption of drug through skin
 - Designed for systemic action
 - Stable blood levels
 - No first pass metabolism
 - Drug must be potent

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Topical preparations

- ✓ Drugs applied topically to skin and mucous membranes
- ✓ Usually rapidly absorbed to produce a local effect
- ✓ Only intact skin surfaces should be used to prevent systemic effects
- ✓ Massaging skin promotes drug absorption

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علامت اختصاری	نگارش لاتین	شکل دارو	علامت اختصاری	نگارش لاتین	شکل دارو
SOL	Solution	محلول	SUS	Suspension	سوسپانسیون
Loz	Lozenge	قرص مکیدنی	SYR	Syrup	شربت
EFF Tab	Effervescent	قرص جوشان	ELIX	Elixir	الکزیر
SUPP	Suppository	شیاف	CAP	Capsule	کپسول
-	Vial	ویال	TAB	Tablet	قرص
-	Spray	اسپری	SER	serum	سرم
-	Mouth Wash	دهان شویه	-	Drop	قطره
C.Tab	Coated Tablet	قرص پوشش دار	POM	Pomade	پماد
Chew tab	Chewable Tablet	قرص قابل جویدن	-	Cream	کرم
	Scored tab	قرص قابل تقسیم	OINT	Ointment	روغن
-	Tooth paste	خمیر دندان	AMP	Ampule	آمپول

علامت اختصاری شکل دارویی

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علامت اختصاری	واحد
mg	میلی گرم
g	گرم
kg	کیلوگرم
meq	میلی اکی والان
mcg	میکروگرم
gtt	قطره
IU	واحد بین المللی

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راه مصرف	علامت اختصاری
داخل شریانی	IA (Intra-arterial)
داخل وریدی	IV (Intravenous)
داخل عضلانی	IM(Intramuscular)
زیر جلدی	SC/SQ (subcutaneous)
خوراکی	PO (Per oral)
رکتال	PR (Per rectal)
واژینال	Vag (Vaginal)

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پیمانه	مقدار
هر قاشق چای خوری	2cc
هر قاشق مربا خوری	5cc
هر قاشق غذا خوری	10cc
هر استکان	100cc
هر لیوان	250cc
هر ۲۰ قطره معادل	1cc

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علامت اختصاری	meaning	دستورات مصرف
q.d/ QD	quaque die once a day)	یکبار در روز
b.i.d	bis in die (twice a day)	دو بار در روز
t.i.d /tid/TID	ter in die (3 times a day).	سه بار در روز
q_h	every so-many hours	هر چند ساعت
q.i.d/qid/QID	quater in die (4 times a day)	چهار بار در روز
hs	at bedtime	قبل از خواب
p.r.n/prn/PRN	pro re nata (as circumstances require, as needed, when necessary)	در صورت لزوم

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