



Routes of drug administration and dosage forms

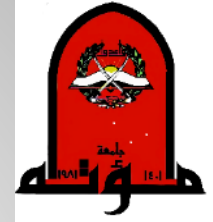
By

Dr. Lamiaa Meghawery

**Associate professor of pharmacology
Faculty of Dentistry
Mutah university**



ILOS



- Recognize different routes of drug administration.
- Identify difference between oral and sublingual routes.
- Enumerate advantages and disadvantages of oral route.
- Analyze advantages and disadvantages of rectal route.
- Mention different dosage forms of different routes.

Routes of administration

Enteral

Others

Oral

Sublingual

Rectal

Parenteral

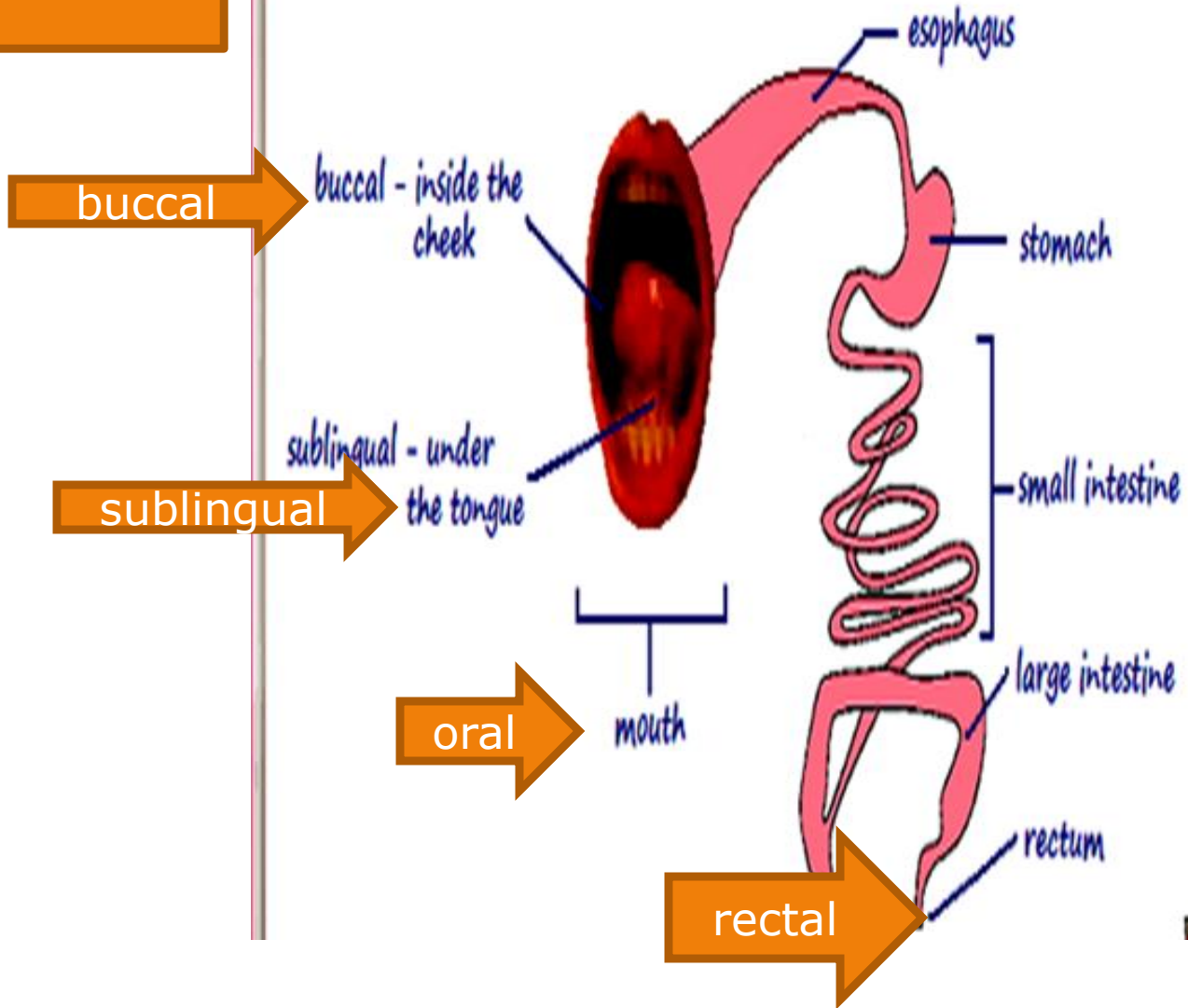
Inhalation

Topical

Injection

SC implantation

Enteral route:



I) Advantage of Oral route

- **Convenient.**
- **Safe.**
- **Easy.**
- **Economic.**

Disadvantage of Oral

- ✚ **Not Suitable in these condition:**
 - Unconscious.
 - Uncooperative (children)
 - Vomiting.
 - irritant.
 - Large volume.
- ✚ **Emergency (slow onset).**
- ✚ **High 1st pass effect.**

I) Oral dosage Forms

**Drugs taken by the mouth &
swallowed for local or systemic effect.**



Solid



Liquid



A) Solid oral dosage form

- Tablets.**
- Capsules.**
- Powders.**
- Effervescent granules.**

1) Tablets

Solid dosage form of varying shape, size & weight in which the drug is **compressed** with inert substance (excipients).

Tablets

- *Simple tablets.*



- *Sugar-coated tablets*

- *Mask bad taste*
- *Improve appearance*
- *Protect against air & light*



- *Enteric-coated tablets:*
 - *Remain intact in the stomach but dissolve in the intestine.*

- *Advantage:*

Protect the stomach (Na Salicylate)



Tablets

- **Controlled-release (CR) = Sustained-release (SR) = Slow-release = Extended-release = Retard = timed-release**
 - **Long duration \Rightarrow \Downarrow Frequency, \Uparrow Patient Compliance.**

بتزود

بتقلل

بتحسن



Tablets

- ***Effervescent tablets:***

Prepared by adding sodium bicarbonate + citric acid

- ***When added to water CO₂ is liberated → improved palatability***
- ***The patient is advised to drink the drug during effervescence***



2) Capsules

Gelatin shell containing individual doses of drugs

What is the benefit? (accurate dose)

- **Hard gelatin:**
 - Packed with **powdered** drugs
- **Soft gelatin:**
 - Packed with **liquid** drugs
- **Enteric coated capsule.**
- **Sustained release capsule.**



3) Powders

in *packets* or in *Bulk*



4) Effervescent granules

in *Packets* or in *Bulk*.

***B) Liquid Oral
Dosage Forms***

Aqueous

1-Solution & Mixture.

2-Syrup. شراب

3-Suspension. معلق

4-Emulsion. مستحلب

5-Decoction. مغلي

6-Infusion. منقوع

Alcoholic

-Tincture: **alcoholic**
is $> 25\%$

-Elixir: sweetened,
flavored ,
hydroalcoholic (alcohol
is $\leq 25\%$)

1) *Aquous*

- *Solution*: **One** drug is simply dissolved in water.



- *Mixture*: **> one** drug are dissolved in the in water.

1) Aqueous

- *Syrup*: Sweetened, coloured & flavored aqueous preparation containing drug(s)



Aqueous

- *Emulsion*: Fixed oil dispersed as small globules in water by means of emulsifying agent (gum)
- *Suspension*: Insoluble finely divided powder suspended in water by suspending agents.
- *Decoction*: Boiling dried plant in water.
- *Infusion*: Soaking dried plant in cold or boiling water.



Emulsion

- Insoluble.
- Fine Powder.



Aqueous

- *Decoction*: Boiling dried plant in water.



- *Infusion*: Soaking dried plant in cold or boiling water.



2) *Alcoholic*

Tincture: Alcoholic preparations of vegetable drugs e.g. tincture belladonna.



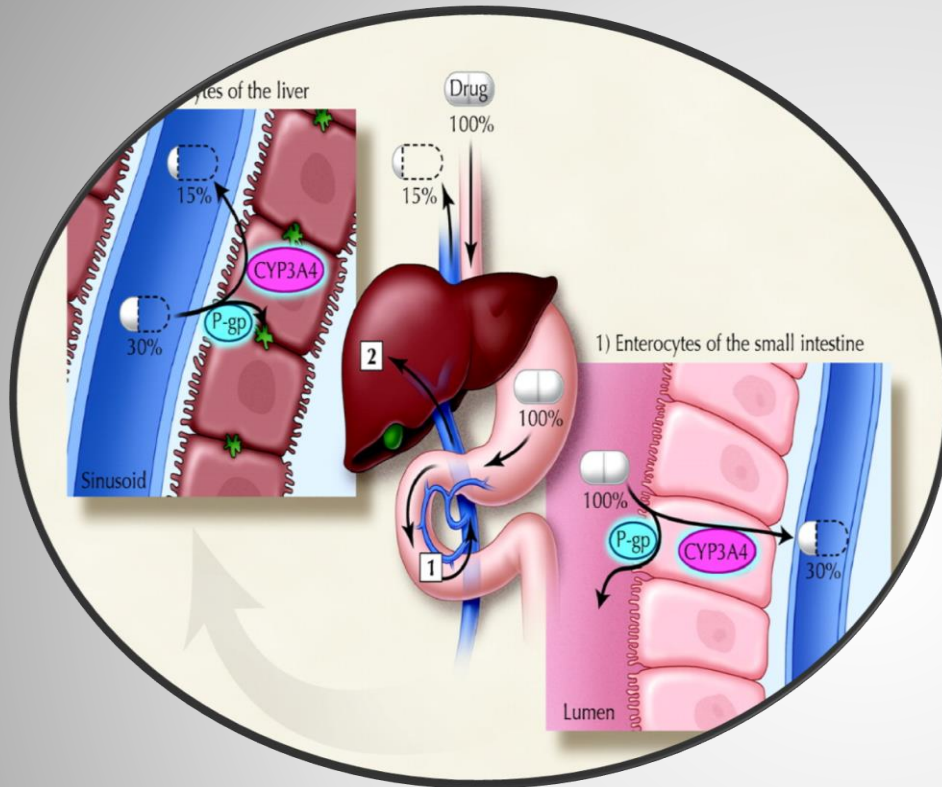
2) *Alcoholic*

Elixir: Sweetened, colored & flavored hydro alcoholic preparation that contain 25% alcohol.



II) Sublingual Route





First Pass Effect

Advantage of Sublingual route

- ✚ Rapid action.
- ✚ **Bypass 1st pass** (metabolism in liver, intestine and GIT enzyme and pH)
- ✚ Can control the dose by spitting out the tablets.

II) Sublingual Dosage Forms

Sublingual pellets (Linguets): small tablets to be placed under tongue to reach directly to systemic circulation (e.g. nitroglycerine).

**suitable only
if :**

- ✚ Palatable.**
- ✚ Soluble in saliva.**
- ✚ Effective in small dose**



III) Rectal route:

Advantage of Rectal

- + Rapid absorption.
- + Bypass 1st effect.
- + **Suitable in these condition:**
 - Unconscious.
 - Uncooperative(children)
 - Vomiting.
 - Moderate irritant.
 - Large volume.

Disadvantage of Rectal

- + **Not convenient and may irritate the rectum.**
- + **Irregular absorption.**
- + **Not suitable in diarrhea.**

III) Rectal Dosage Forms:

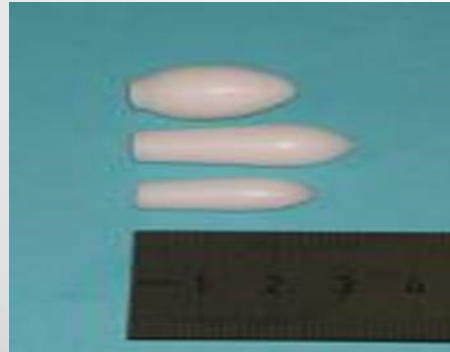
Drugs are absorbed through rectal mucosa to reach systemic circulation.

- **Suppository (solid)**
- **Enema (liquid)**

1-Suppository

- *Rectal supp.:*

These are solid preparations at room temperature that melt at body temperature. The base usually employed for it is either cocoa butter or gelatin.



2- Enema

- **Fluid administered into the rectum & colon.**



	Retention enema	Evacuant (cleansing enema)
Aim	A mean of giving the drug (the drug retained in the rectum).	Evacuate the colon from faeces.
Examples	<ul style="list-style-type: none"> - Prednisolone in treatment of ulcerative colitis, 	<ul style="list-style-type: none"> - Treatment of constipation - Pre-operative preparation of bowel - Before colonoscopy
Method	<ul style="list-style-type: none"> - Small volume (1/4 liter) - Slow flow at low head position. <p>Non irritant.</p>	<ul style="list-style-type: none"> - Large volume(1 liter). - Rapid flow at high head position. <p>-Mild irritant</p>

Questions

1. *All of the following is an aqueous oral dosage form*

EXCEPT:

- (a) Suspension
- (b) Solution
- (c) Syrup
- (d) **Elixir**

2. *What is the dosage form for sublingual route and mention its criteria?*

3. *Explain :*

Sublingual route is preferred in emergency .





Thank You