Routes of Drug Administration

With Advantages and Disadvantages

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# Route of Administration

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<td>Intrathecal Route &amp; Intradermal Route</td>
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* In some books there is several classes, which are part of above class
Oral Route of Administration

Superior lip (pulled upward)
Superior labial frenum
Gingivae
Palatoglossal fold
Fauces
Palatopharyngeal fold
Hernia
Hiatus
Esophagus
Diaphragm
Stomach
Inferior vena cava
Aorta
Hepatic artery
gall bladder
Portal vein
Common bile duct
Transverse colon
Descending colon
Jejunum
Ileum
Sigmoid colon
Rectum
Anus

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Oral Route of Administration

**Advantages**

1. Convenient
2. Self medication is possible
3. Painless and user friendly
4. Varieties are available
5. Low cost
6. No issue of sterilization *
7. Compact in size
8. Withdrawal is possible

**Disadvantages**

1. Slow onset of action
2. Degradation in GIT
3. First pass metabolism
4. GIT irritation
5. Unpleasant taste
6. Food-Drug Interaction
7. May be vomit out
8. Not for unconscious

* Does not mean contaminated

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Buccal/Sublingual

It is closely related to the oral route; however, The tablet is to be dissolved under the tongue (sublingual) or in the pouch of the cheek (buccal). Nitroglycerin, for heart patients, in tablet form is more likely the most frequently administered sublingual drug.
Advantages

1. Rapidly Absorbed
2. Bypass GIT
3. Fast onset of action
4. No GIT irritation
5. No Interaction with food
6. Drug stability

Disadvantages

1. Inconvenience
2. Loss of efficacy if swallowed
3. Limited availability
4. Small dose limit
Parental Route of Administration

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Parental Route of Administration

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Parental Route of Administration

**Advantages**

1. Very fast onset of action
2. Avoid first pass
3. No degradation in GIT
4. No food Interaction in GIT
5. Prime consideration in clinical condition
6. Parenteral therapy is required for drugs that are not effective orally

**Disadvantages**

1. The dosage form must be administered by trained personnel
2. It is difficult to reverse its physiological effect
3. Painful
4. Expensive
5. Should be fully sterilized

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Transdermal Route

Advantages

Avoid first pass. Mask Taste and Pain
Easy in use, Easy in withdrawal
Controlled release, Comfortable in application. Free from drug intervals, Single application multiple day use.

Disadvantages

Inhalational Route

Advantages


Disadvantages

Ophthalmic & Ear Route

- Topical
- Sub-Conjunctival injection
- Glaucoma (Iris-Ciliary Body)
- Intravitreal injection
- Diabetic Retinopathy (Retina)
- AMD (Choroid)
- Sub-Tenon injection

- Outer ear
- Middle ear
- Inner ear
- Ossicles
- Semicircular canals
- Vestibular nerve
- Auditory nerve
- Cochlea
- Eustachian tube
- Ear canal
- External ear
- Eardrum
- Mastoid bone

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Vaginal and rectal route
Buccal
- High activity of the proteolytic enzymes in saliva
- Small surface area
- High turnover rate of the epithelium

Oral
- High activity of proteolytic enzymes in the gut
- Low pH in the stomach
- Interaction with food components
- Low mucosal permeability
- Most convenient for patients

Nasal
- Small surface area
- Sensitive to many excipients
- High vascularization

Pulmonary
- Phagocytosis by macrophages
- Complex inhalers and formulations
- High vascularization
- Relatively high bioavailability

Transdermal
- Extremely impermeable
- Highly technological administration devices
- Easy to administer

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