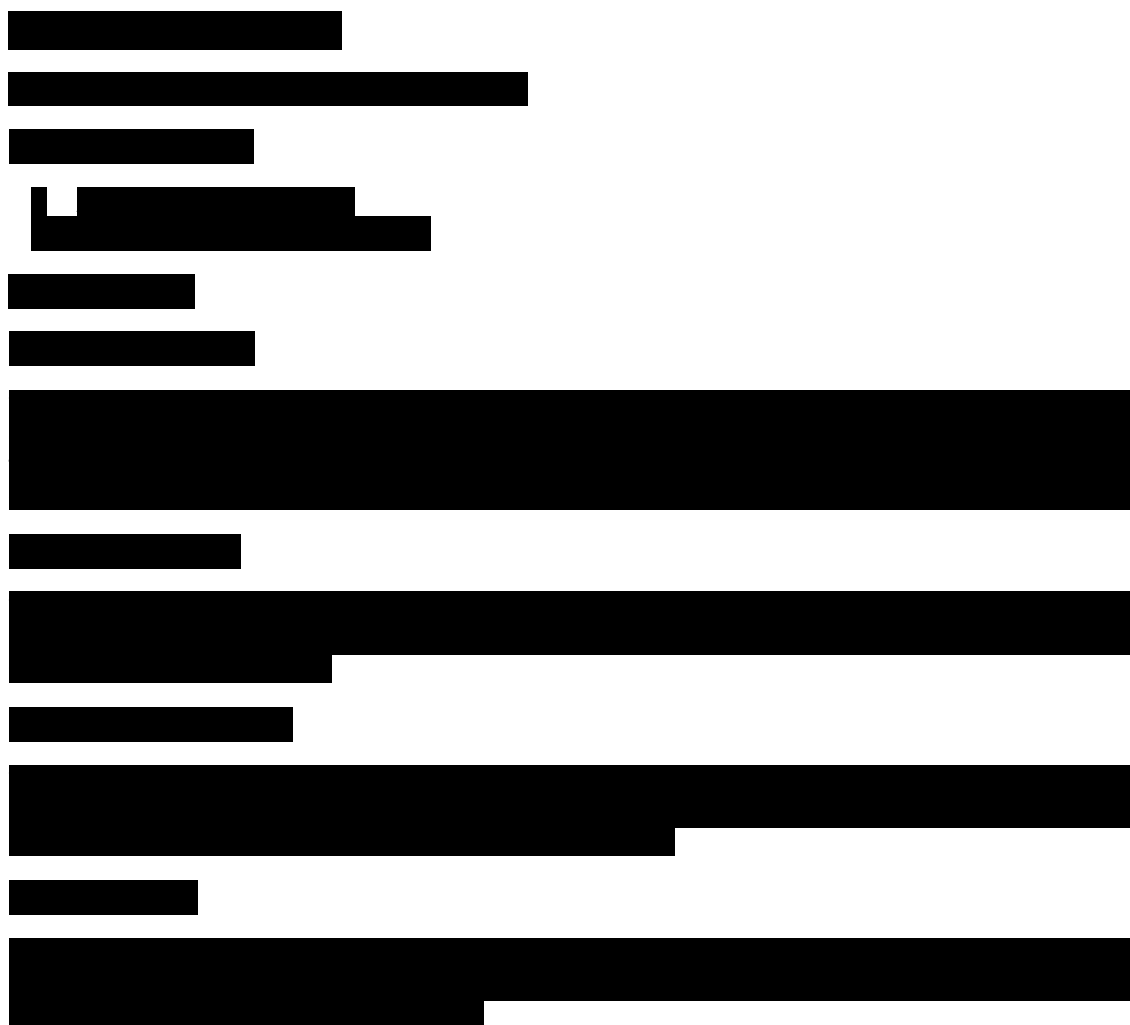




3.4 Absorption

Absorption derived from (Absorb means, intake or accept & formation means process).

Generally, absorption, the process of solid, liquid, gas or other substance being taken in any route that is called absorption e. g. plant absorb oxygen. In pharmacological definition absorption is movement of the unchanged drug from its site of administration (oral, IV, IM, topical and skin etc) into the systemic circulation (blood, fluid and tissue, etc).

Classification:-

- i. **Internal route**
- ii. **Parenteral route**
- iii. **Topical route**

i. **Internal route:** -

By these routes the drug is the epithelial lining of the gastrointestinal tract, sublingual or buccal and also rectal. No ionized lipid soluble drugs are readily absorbed from stomach as well as intestine at rates proportional to their lipid: water partition coefficient.

ii. Parenteral route: -

Par-beyond, Enteral-Intestinal,

By these routes the drug is deposited directly in the vein, blood, fluid and tissue, in the vicinity of the capillaries (e. g. Intravenous, Intramuscular, Intradermal, Intraspinal and Intraarticular etc) lipid soluble drugs pass readily across the whole surface of the capillary endothelium.

iii. Topical route:-

In these routes (skin, eye, ear, nose, inhalation, cornea, mucus membrane and intravaginal) the systemic absorption after topical application depends primarily on lipid solubility of drugs.

The factors affecting GI absorption of a drug are:-

A) Physicochemical factors: - Including factors relating to the physical and chemical properties of the drug and dosage form characteristics and pharmaceutical ingredients.

- 1) Drug solubility and dissolution rate
- 2) Particle size and effective surface area
- 3) Polymorphism and amorphism
- 4) Salt form of the drug
- 5) Pseudo polymorphism (hydrate/solvates)
- 6) Lipophilicity of the drug
- 7) pKa of the drug and gastrointestinal pH
- 8) drug stability
- 9) Stereochemical nature of the drug

B) Pharmaceutical (Manufacturing) factors:-

- 1) Buffer
- 2) Pharmaceutical ingredients (excipients/adjuvant)
- 3) Nature and type of dosage form
- 4) Product age and storage condition

C) Biological (Patient related) factors:-

- 1) Age
- 2) Sex (male/female)
- 3) Species (man/animal/insect)
- 4) Disease state
- 5) Route of drug administration
- 6) Gastrointestinal pH

3.5 Factor Affecting Absorption

These are some other factors, which play a major role in absorption.

- i. Aqueous solubility
- ii. Concentration
- iii. Area of absorbing surface
- iv. Vascularity of the absorbing surface
- v. Route of administration

i) Aqueous solubility:-

Solid dosage form drugs given as watery solution are absorbed faster than when the same is given in solid form or as oily solution.

ii) Concentration:-

Drug given as concentrated solution is absorbed faster than from dilute solution.

iii) Area of absorbing surface:-

Larger is the surface area, faster is the absorption.

iv) Vascularity of the absorbing surface:-

Blood circulation removes the drug from the site of absorption and maintains the concentration gradient across the absorbing surface.

v) Route of administration:-

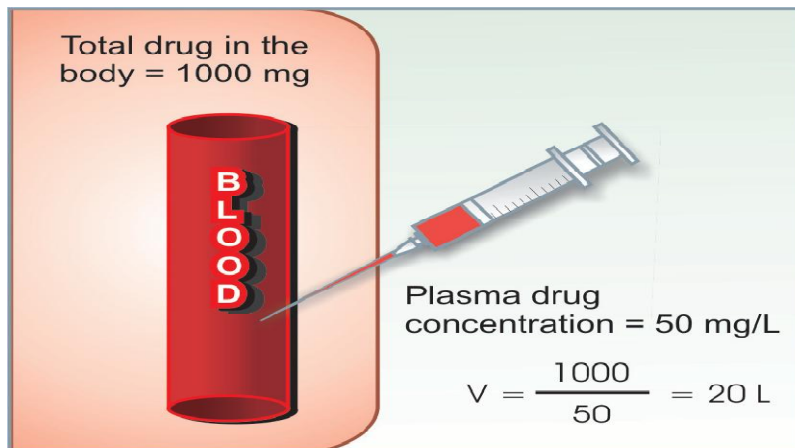
This affects drug absorption, because each route has its own peculiarities e. g. oral, topical and subcutaneous.

[REDACTED]

[REDACTED]

[REDACTED]

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