
Bio Pharma
Lama Nofal

مراجعة سريعة للمحاضرة السابقة

execration : irreversible loss of drug

irreversible معظم العمليات بتكون غير راجعة

metabolism هيي reversible العملية الوحيدة الي بتكون راجعة

execration and elimination مش زي بعض عمليات مختلفات تماما

irreversible loss of drug

irreversible loss of parent drug

عملية الافراز تحدث بشكل اساسي في الكلية

renal system in the kidney

functional unit is nephron

normal range of renal clearance = 120 ml/min
renal clearance بنقدر نحسبها لاي دوا

renal clearance = 120 {filtration only }
renal clearance >120 { filtration + secretion }
renal clearance < 120 { filtration + reabsorption }

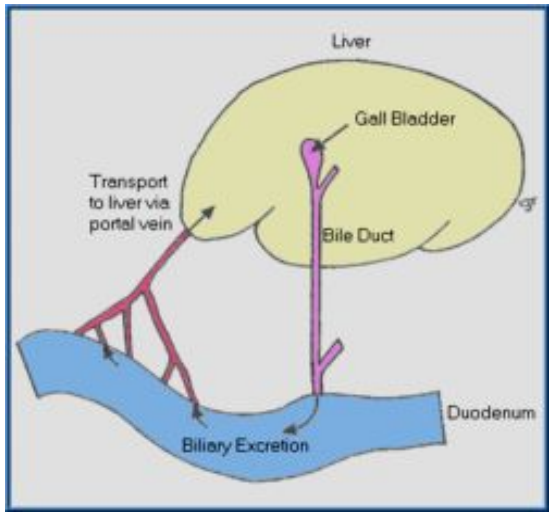
وما زرع الله في قلبك رغبة الوصول لأمر معين
الا لانه يعلم انك ستصل

Drug excretion

2.Fecal excretion: excretion through the feces

Elimination of toxicants in the feces

occurs from two processes:



A- excretion in bile: through the liver
high solubility

- Some heavy metals are excreted in the bile, e.g., arsenic, lead, and mercury. However, the most likely substances to be excreted via the bile are comparatively large, ionized molecules, such as large molecular weight (greater than 300) conjugates e.g. morphine and chloramphenicol (as glucuronide).

بتصير الادوية
less water soluble
ولكن ليس بشكل كامل

↑ partition coefficient

- The biliary secretion is active since bile/plasma concentrations maybe as high as 50/1. There can also be competition between compounds.

Drug excretion

- Once a substance has been excreted by the liver into the bile, and subsequently into the intestinal tract, it can then be eliminated from the body in the feces, or it may be reabsorbed.

more lipid soluble

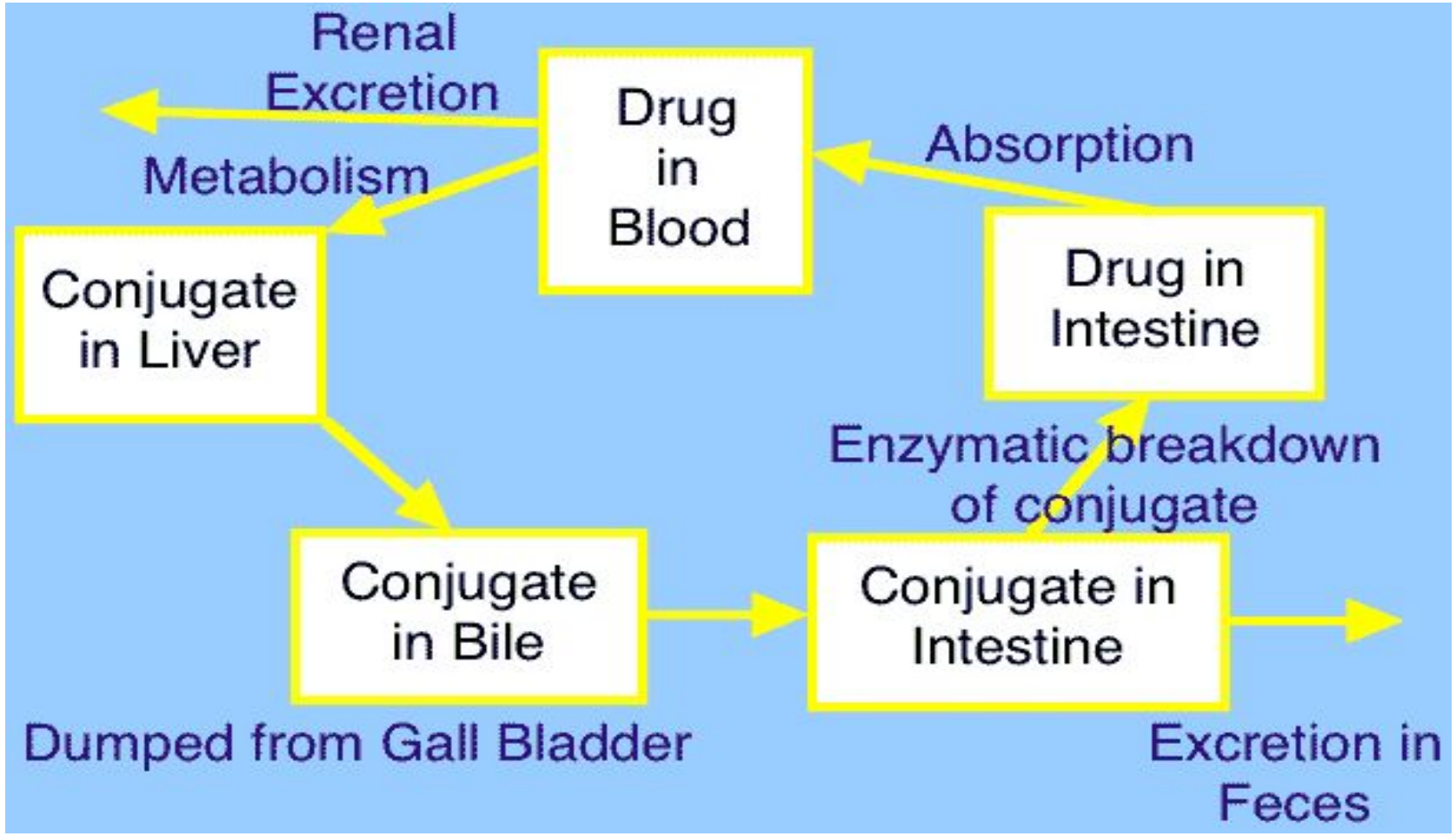
بعد التكسر

- Since most of the substances excreted in the bile are water-soluble, they are not likely to be reabsorbed as such. However, enzymes in the intestinal flora are capable of hydrolyzing some glucuronide and sulfate conjugates, which can release the less-polar compounds that may then be reabsorbed. This process is known as the **enterohepatic circulation.**

- The effect of this enterohepatic circulation is to prolong the life of the drug in the body.

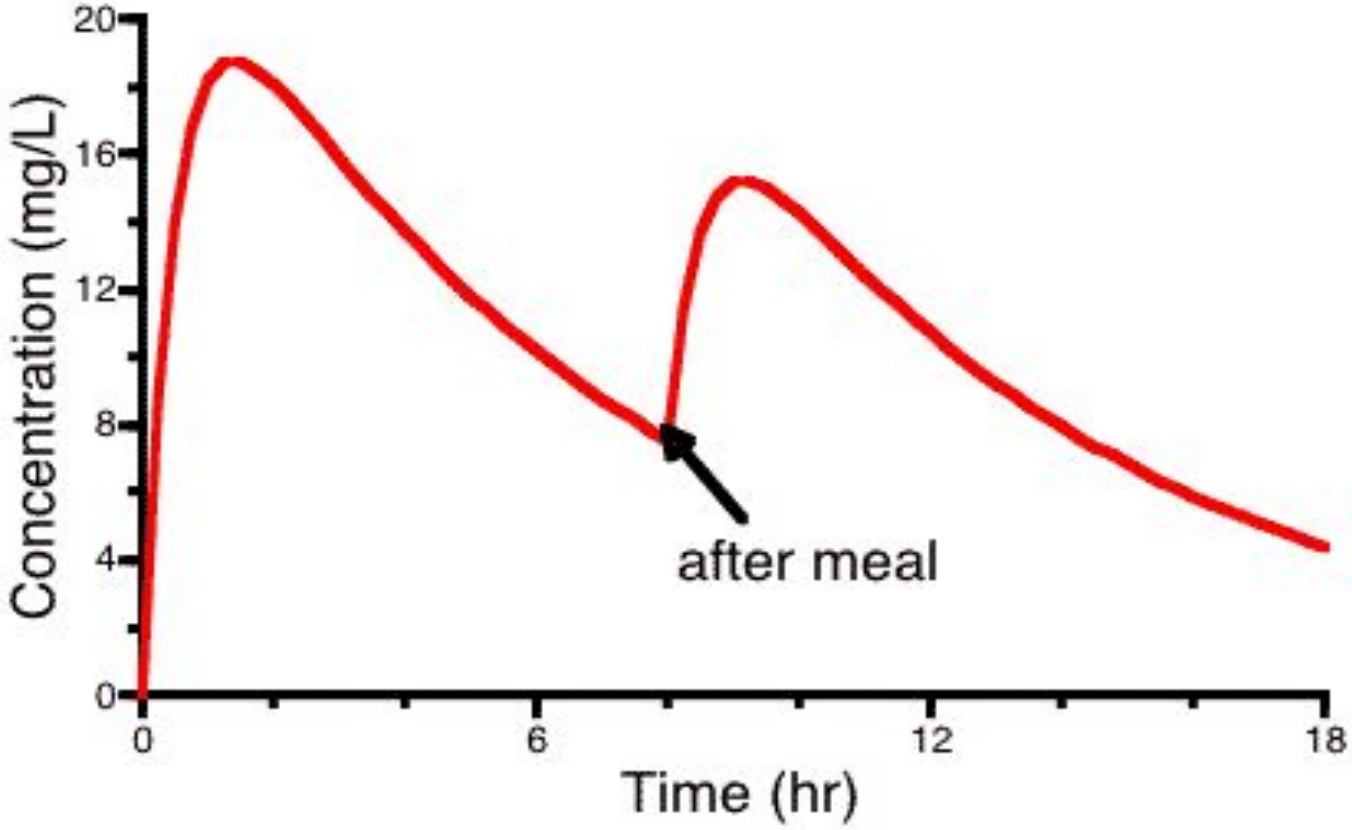
Drug excretion

Enteroheptic Recycling



Drug excretion

Cp versus Time showing a Second Peak



Drug excretion

- Another way that drugs can be eliminated via the feces is by:

B- direct intestinal excretion:

- Orally administered drugs may be excreted in the feces if they are incompletely absorbed or not absorbed at all (e.g. Cholestyramine)

- Increasing the lipid content of the intestinal tract can enhance intestinal excretion of some lipophilic substances. For this reason, mineral oil is sometimes added to the diet to help eliminate toxic substances, which are known to be excreted directly into the intestinal tract.

Drug excretion

Drugs may be excreted by passive diffusion from:

3. Pulmonary excretion: through the lung

- The lung is the major organ of excretion for gaseous and volatile substances. Most of the gaseous anesthetics are extensively eliminated in expired air.

احد ادوية التخدير
يستخدمه أطباء الاسنان

تعتمد على

4. Salivary excretion:

protein bind

- Drug excretion into saliva appears to be dependent on pH partition and protein binding.
- In some instances, salivary secretion is responsible for localized side effects. For example, excretion of antibiotics may cause black hairy tongue, and gingival hyperplasia can be a side effect of phenytoin.

Black hairy tongue

الادوية الي بتعمل side effect

penicillin, erythromycin, doxycycline, and neomycin

Gingival hyperplasia

تضخم اللثة

Phenytoin

عبارة عن التهاب فوق التهاب بكون التهاب بكتيري بعدين بتحول لالتهاب فيروسي super infection

Drug excretion

Examples of compounds that excreted in saliva:

- Superinfection from antibiotics.

- Dental mottling upon tetracycline ingestion.

5. Skin excretion:

- Iodine, bromine, benzoic acid, salicylic acid, lead, arsenic mercury , iron and alcohol are examples of compounds that excreted in sweat.

- Neonatal jaundice result from sulfonamide interaction with bilirubin.

الصفار

Drug excretion

6. Mammary excretion:

Both basic substances and lipid-soluble compounds can be excreted into milk.

Basic substances can be concentrated in milk since milk is more acidic (pH ~ 6.5) than blood plasma.

Since milk contains 3-4% lipids, lipid-soluble drugs can diffuse along with fats from plasma into the mammary gland and thus can be present in mother's milk.

-Substances that are chemically similar to calcium can also be excreted into milk along with calcium.

-Ethanol and tetracycline enter the milk by diffusion through membrane pores (of mammary alveolar cells).

- Mothers smoking more than 20 to 30 cigarettes a day may induce nausea, vomiting, abdominal cramps and diarrhea in the infant.