Xenobiotics (Part 3)

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Semester - VI, Paper DSE-3

Xenobiotics

Distribution of xenobiotics :

After absorption, the xenobiotics penetrate into the various body fluid ,i.e. interstitial fluid, transcellular fluids and cellular fluid, which help in their distribution to the different parts of the body.

Xenobiotics

Accumulation of xenobiotics :

- Xenobiotics can be stored within a variety of different body organs and tissues.
- Depending on the anatomic and physiologic relationships between the storage depot and the target organs and tissues for a specific toxicant, storage of toxic xenobiotics can function as either a protective mechanism or as a means by which the toxic effects of a xenobiotic are potentiated.

Xenobiotics

Accumulation of xenobiotics (contd…):

- Plasma proteins represent a storage site for many xenobiotics (e.g., salicylates, barbiturates, cardiac glycosides) and important physiologic constituents, including steroid hormones, vitamins etc

- A wide variety of xenobiotics accumulate in the liver and kidneys, making these organs ideal sites for post-mortem sample collection in cases of suspected toxicoses

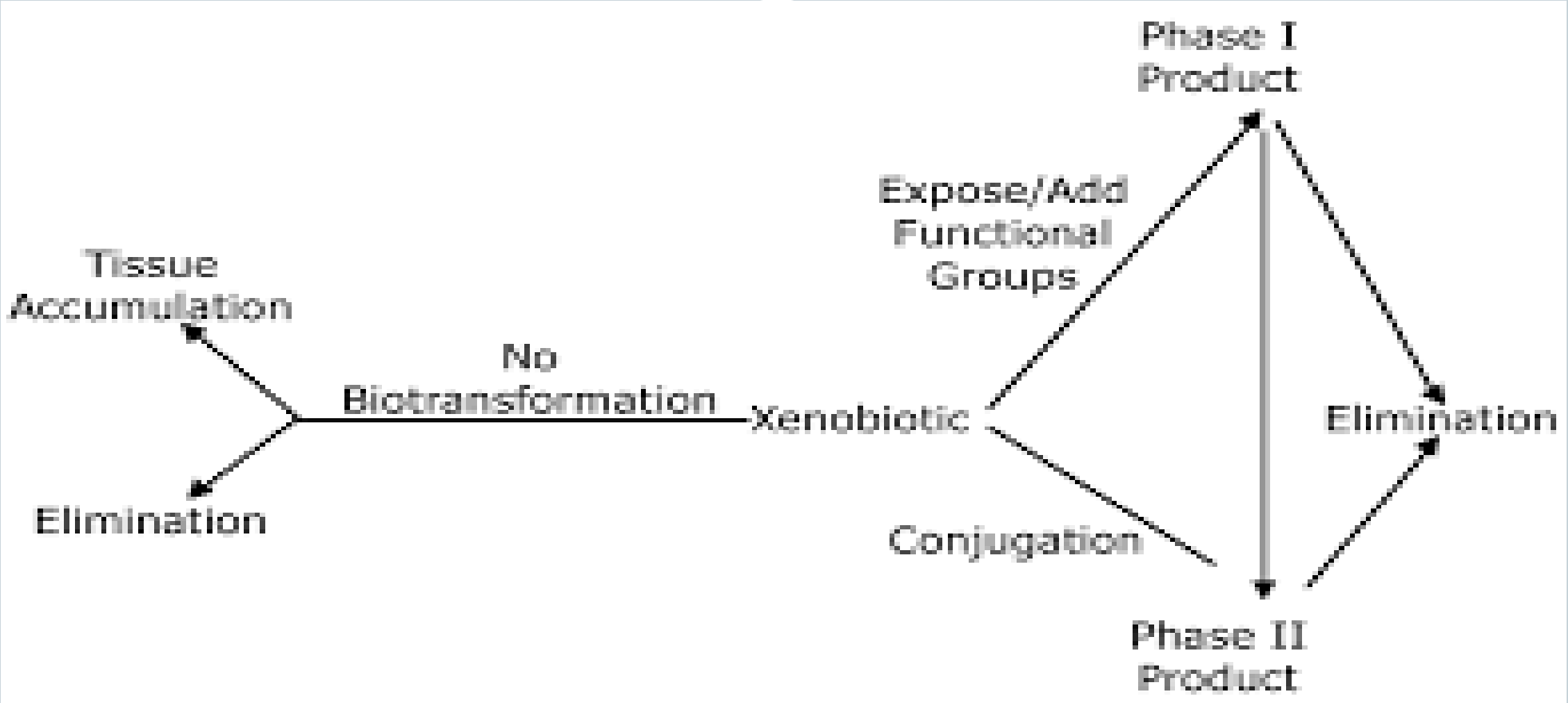
Xenobiotcs

Accumulation of xenobiotics (contd…)

• Some toxic metals, such as cadmium, accumulate in the liver and kidneys because of the high endogenous concentrations and induction of metallothionein in these organs.

• Fat and bone are storage depots for a variety of different xenobiotics, and rapid depletion of body fat stores (weight loss) or increased remodeling of bone during growth or pregnancy have the potential to increase the exposure of target organs or tissue to previously stored toxicants

Xenobiotcs


Phase I
Product
Expose/Add
Functional
Groups
Tissue
Accumulation
No
Biotransformation
Xenobiotic
Elimination
Elimination
Conjugation
Phase II
Product

Xenobiotics

The toxic effect due accumulation and retention of xenobiotics:

- High concentration of organochlorinated hydrocarbons in liver may cause cytoplasmic vaculation , swelling ,necrosis and fatty degeneration of liver.
- Lindane and BHC cause fatty degeneration of kidney,

Haemorrhage of GIT.

Xenobiotics

The toxic effect due accumulation and retention of xenobiotics:

- Aldrin, dielderin etc cause lung congesation.
- Metallic xenobiotics accumulate in kidney and cause nephritis.
- Chorinated hydrocarbon accumulate in the axon sheath and disrupt impulse transmission.

Thank You