

Xenobiotics (Part-2)



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Xenobiotics



Entry of xenobiotics into body

Penetration of xenobiotic depends on its physical and chemical properties

There are three principal entry points for Xenobiotics into the body

- Intestine
- lungs
- skin

Xenobiotics



Entry of xenobiotic into cell

Various possible mechanism by which a toxicant may pass through membrane are as follows—

Simple diffusion

Facilitated diffusion

Simple diffusion –

Most xenobiotics penetrate cell membranes by simple diffusion

Small hydrophilic molecules cross membranes through aqueous pores.

Hydrophobic molecules diffuse across the lipid domains of membrane

Xenobiotics



Facilitated diffusion :

Transport :

Active transport:

Numerous compounds are too large to pass through aqueous pores or too insoluble in lipid domains of membrane, but they are transported very rapidly across membranes, even against concentration gradients.

They cross membrane through active transport.

Xenobiotics



Active Transport(contd...)

- In active transport, substances are actively transported across the cell membrane and are pass into the cell by forming a complex with a substance to be transported.
- The complex is formed on one side of the membrane and diffuse to the other side where the substance is released, after which the carrier returns to the original to repeat the process.

Xenobiotics



Metabolism of Xenobiotics ;

Metabolism of xenobiotics occurs in two phases-

Phase 1 :

Major reaction involved is hydroxylation.

In addition to hydroxylation, a wide range of reactions also take place including-

Deamination,

Dehalogenation,

Desulfuration,

Epoxidation,

Peroxygenation,

Reduction

Xenobiotics



Metabolism of Xenobiotics :

Phase - 2:

the hydroxylated or other compounds produced in phase 1 are converted by specific enzymes to various polar metabolites by conjugation with

Glucuronic acid

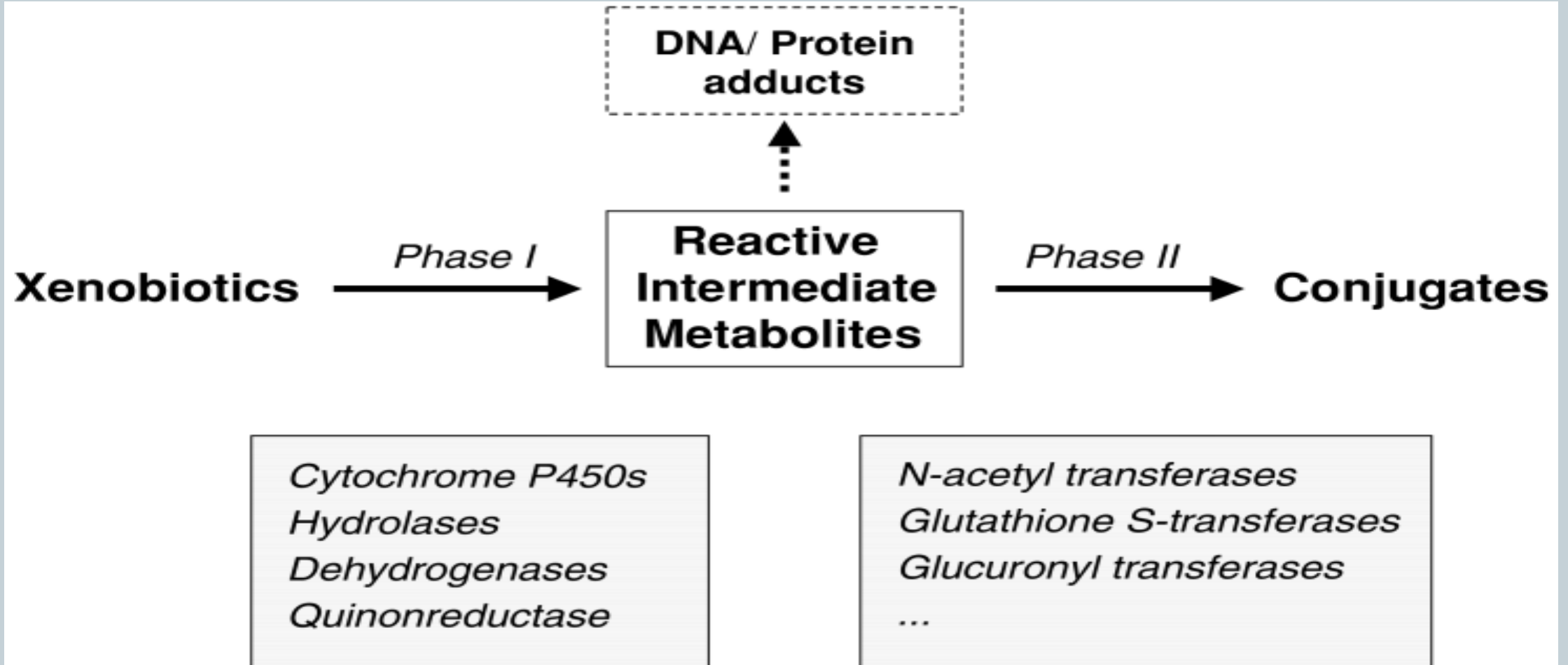
Sulfate, acetate

Glutathione

Certain amino acids

By methylation.

Xenobiotics



Thank You

