

Department of anesthesia

Practical pharmacology

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Metabolism and excretion

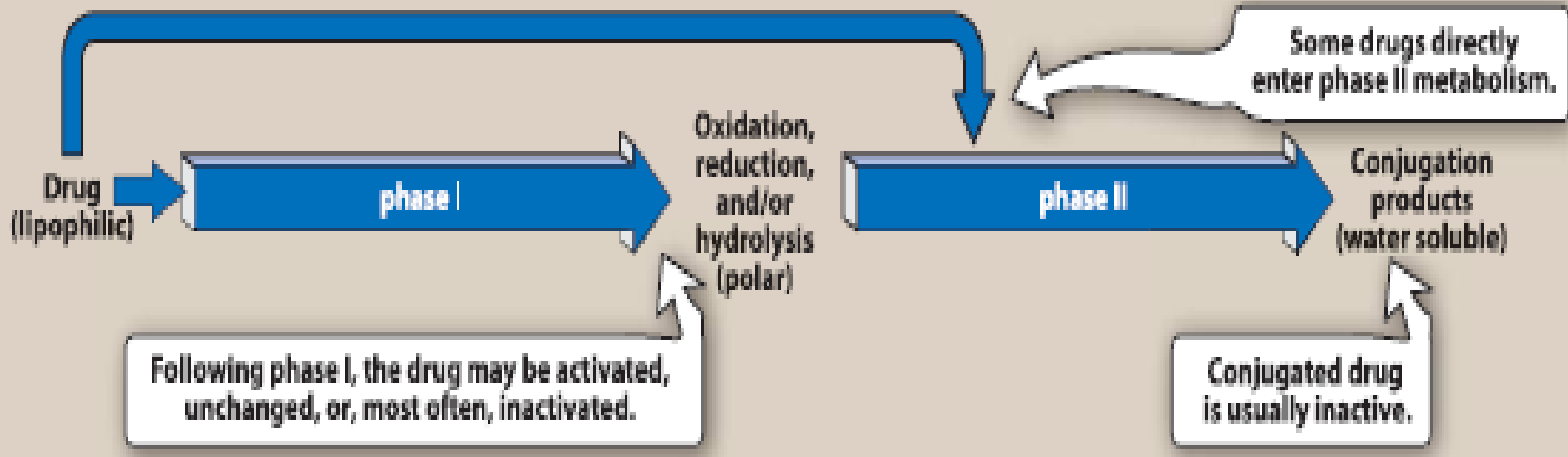
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metabolism and elimination

- **Elimination:** is **irreversible** removal of drug from the body. It involves biotransformation (drug metabolism) and excretion.
- Elimination processes decrease the plasma concentration of drug per unit of time
- There are three major route of drug elimination (hepatic metabolism, biliary elimination, and urinary excretion).

Drug metabolism

- The kidney cannot efficiently excrete lipophilic drugs that readily cross cell membranes and are reabsorbed
- lipid-soluble agents (drug) are first metabolized into more polar (hydrophilic) substances in the liver via two general sets of reactions called phase I and phase II



- Phase 1: Phase I reactions convert lipophilic drugs into more polar molecules
- Phase I metabolism may increase, decrease, or have no effect on pharmacologic activity.

- Phase II : If the metabolite from phase I is sufficiently polar, it can be excreted by the kidneys directly (not need phase2)
- Many phase 1 metabolites are still too lipophilic to be excreted so these compound needs additional reaction (phase 2) to become water soluble (polar) compound
- Many drugs after became polar agent , its became (therapeutically inactive)

route of drug excretion

1. Other route (sweat, saliva, tears, hair, and skin)