

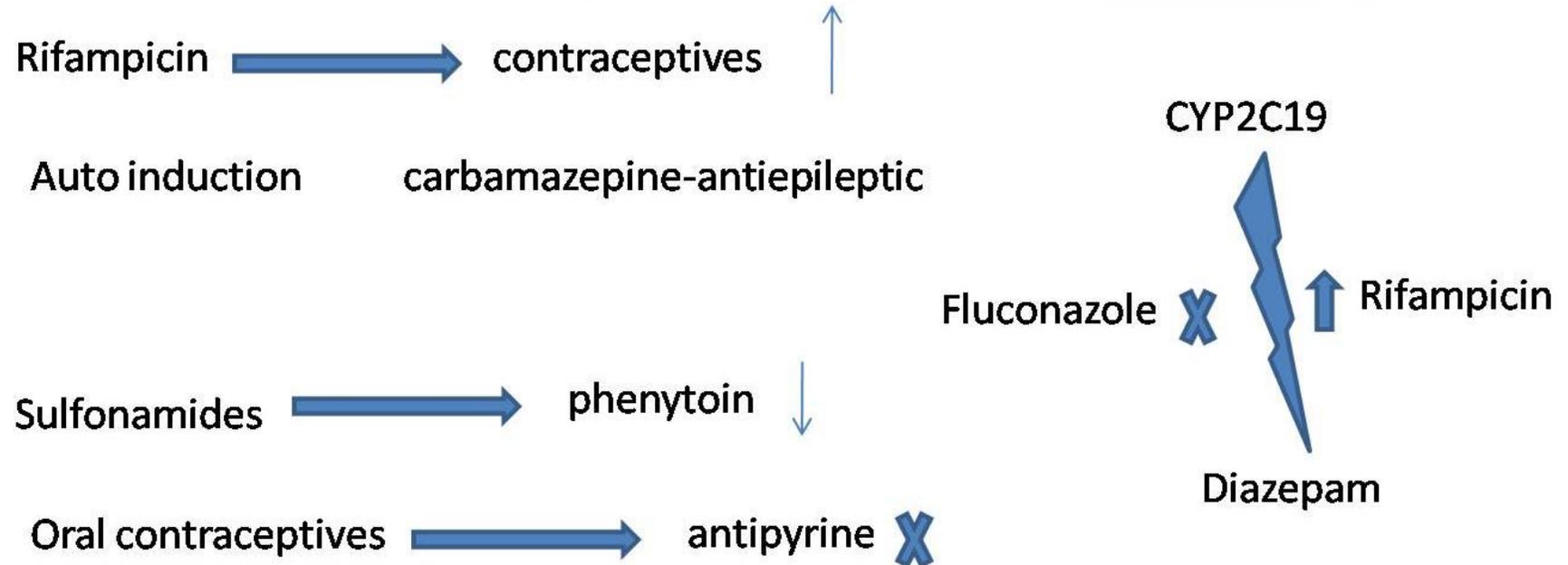
FACTORS AFFECTING BIOTRANSFORMATION OF DRUGS

- Chemical
- Biological
- Altered Physiological
- Temporal
- Route of Drug Administration
- Environmental

Chemical Factors

1. Enzyme Induction

2. Enzyme Inhibition



Biological Factors



Age



Gender



Genetics



Race



Diet

ALTERED PHYSIOLOGICAL FACTORS



Pregnancy

Phenytoin ↑
Phenobarbitone ↓



Hormonal Imbalance

Hypothyroidism ↑
Hyperthyroidism ↓



Disease states

Liver disease
Renal diseases
Cardiovascular diseases

TEMPORAL FACTOR

Diurnal variations and variations in enzyme activity with light cycle is **circadian rhythm**.

Enzyme action is maximum during early morning and minimum in late afternoon which is probably due to high levels of corticosterone.



ROUTE OF ADMINISTRATION

Oral route can result in extensive hepatic metabolism of some drugs (first pass effect).

Lignocaine is almost completely metabolized if taken by oral route therefore the preferable route is Topical.



ENVIRONMENTAL FACTORS

- Aromatic hydrocarbon contained in Cigarette smokers act as enzyme inducers.
- Chronic alcoholism might lead to enzyme induction as well.
- Pesticides or Organophosphate insecticides may act as enzyme inducers.
- In hot and humid climate biotransformation is decreased and vice versa.
- At high altitude decreased biotransformation occurs due to decreased oxygen leading to decreased oxidation of drugs.
- Ionizing radiation reduce the biotransformation by altering enzyme, transporter, gene expression and drug properties

