Drug Metabolism Ways

1- Phase I Reactions (oxidation, reduction, hydrolysis, hydration etc.)

2- Phase II Reactions- Conjugation reactions

1- Phase I Reactions

Its purpose is to make the molecule more polar.

The introduction of a polar functional group is to introduce a new functional group to the molecule, such as in hydroxylation reactions, or to replace an existing functional group (for example, hydrolysis of esters to carboxylic acids and alcohols, oxidation of alcohols to acids, reduction of aldehydes and ketones to alcohols).

In this way, the molecule becomes more polar and more easily disposable.

1. OXIDATION REACTIONS

- Aromatic oxidation (Aromatic hydroxylation)
- Alken epoxidation
- Oxidation of aliphatic and alicyclic carbon atoms
- Oxidation of carbons adjacent to an sp2 center

(Oxidation of carbon atoms in benzyl, allylic and carbonyl or imine α-position)

- Oxidation of carbon-nitrogen systems

(Oxidative N-dealkylation, oxidative deamination, N-oxide formation, N-hydroxylation)

- Oxidation of carbon-oxygen systems (Oxidative O-dealkylation)
- Oxidation of carbon-sulfur systems

(Oxidative S-dealkylation, S-oxidation, desulfurization)

- Alcohol and aldehyde oxidation

2. REDUCTION REACTIONS

Reduction of carbonyl (aldehyde, ketone)

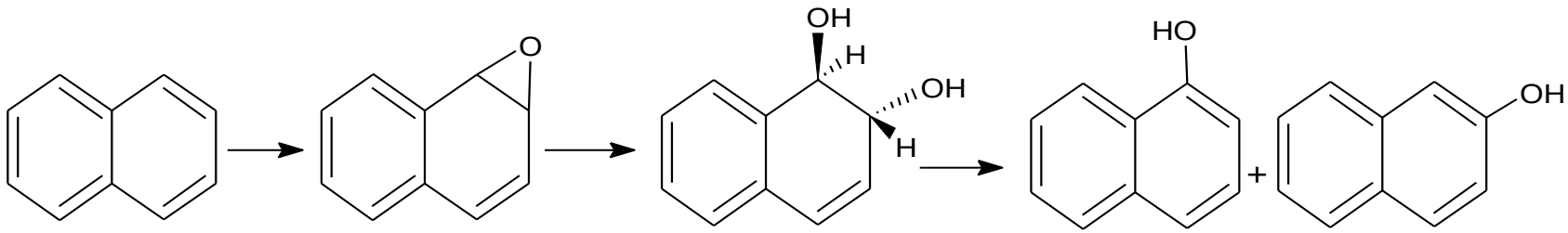
Nitro reduction

Azo reduction

3. HYDROLYSIS REACTIONS

Hydrolysis of esters and amides

Aromatic Hydroxylation



Naftalen

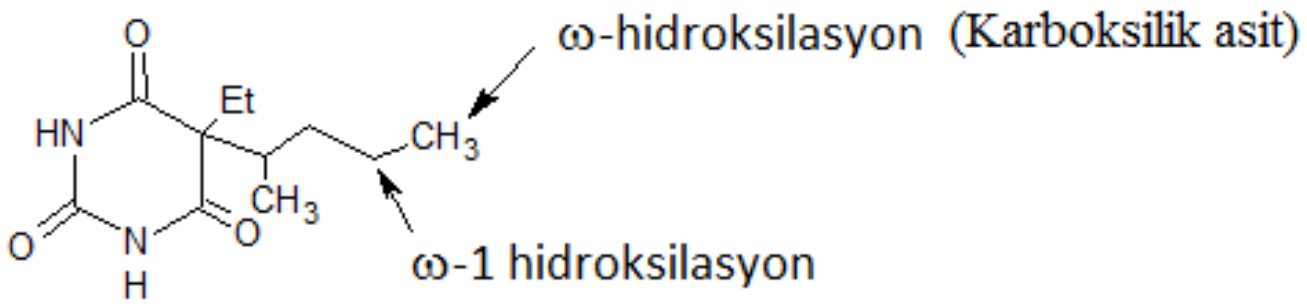
Aren oksit (kanserojen)

%95

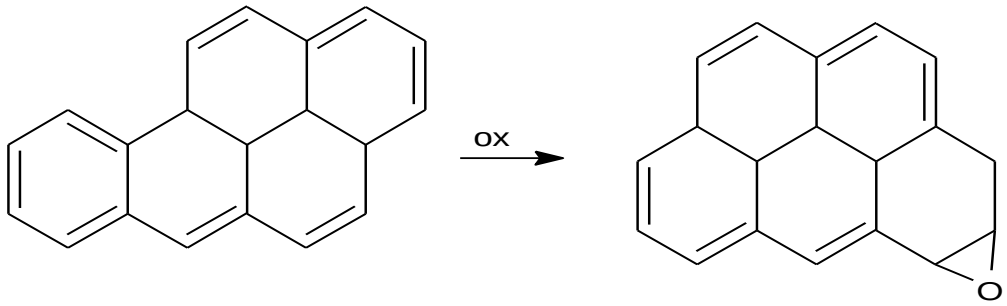
%5

Aliphatic Hydroxylation

ω ve ω-1 hydroxylation



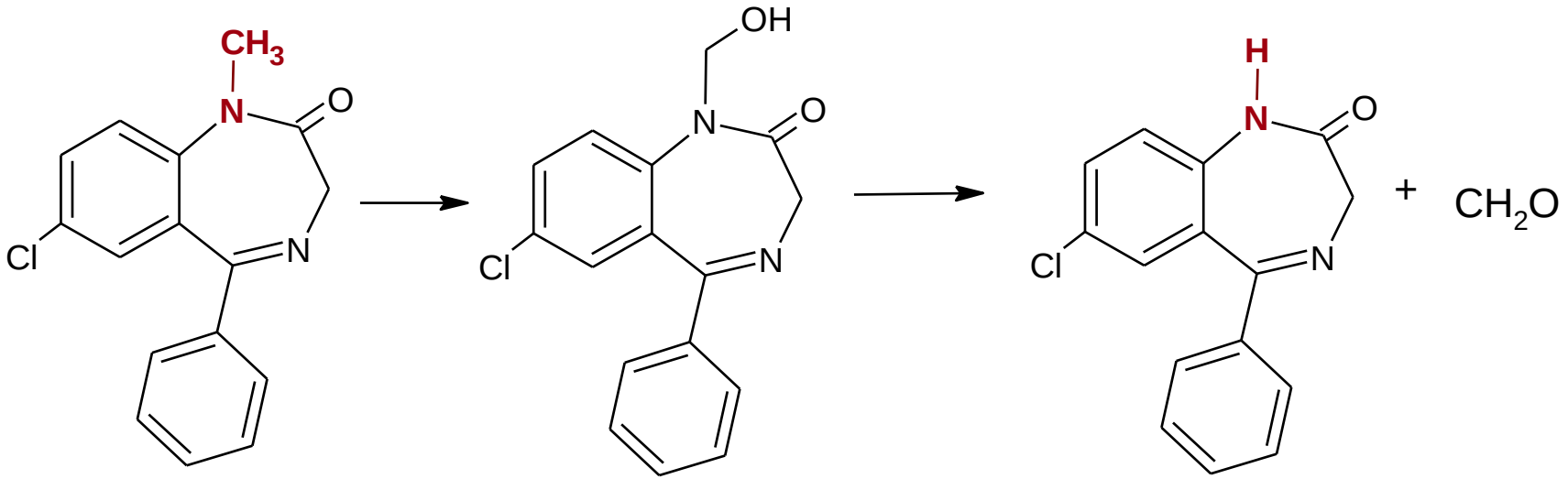
Epoxidation



Benzopiren

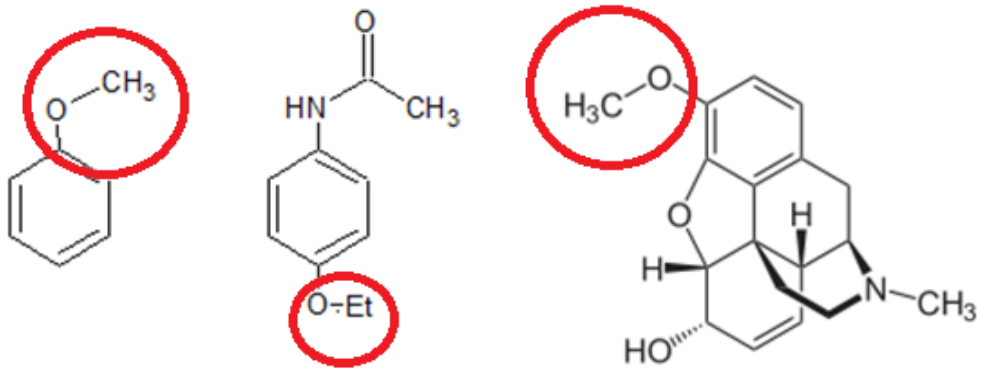
Benzopiren-4,5-epoksit

N-dealkylation

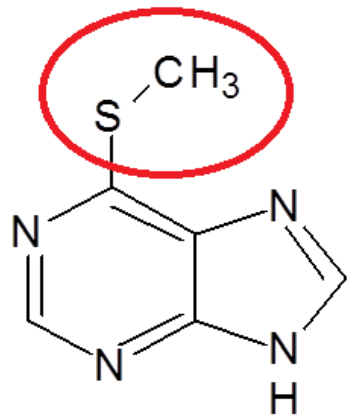


Diazepam

O-dealkylation

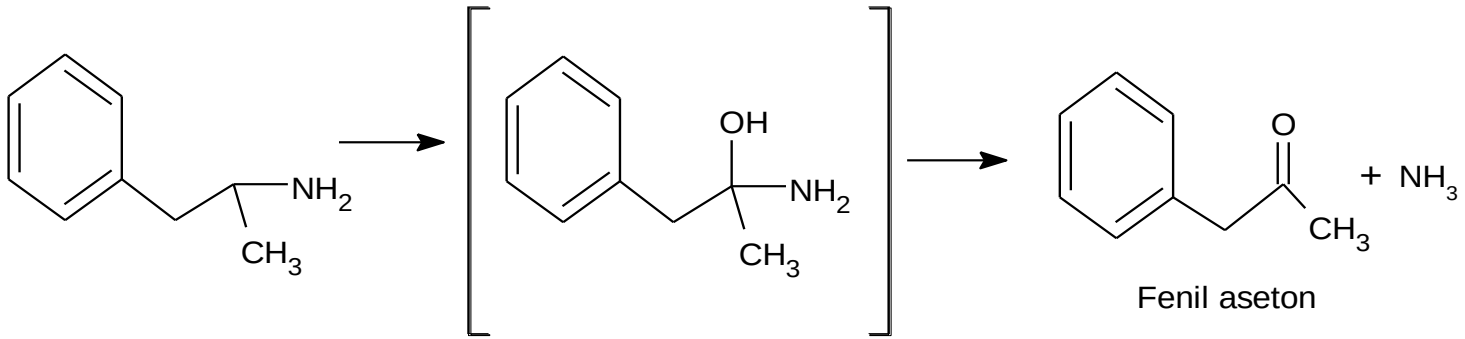


S-Dealkilasyon



6-Metil tiyopürin

Oxidative Deamination

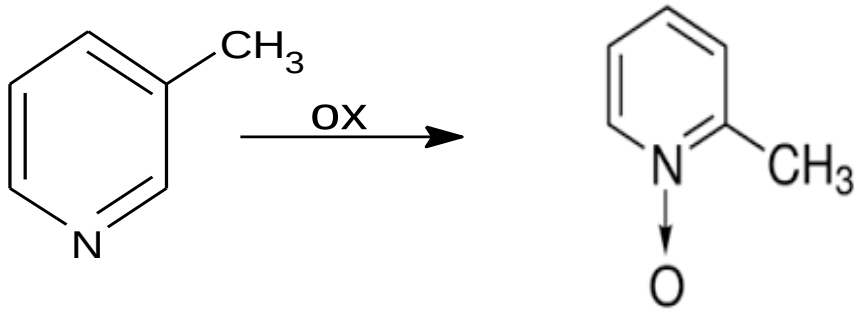


Amfetamin

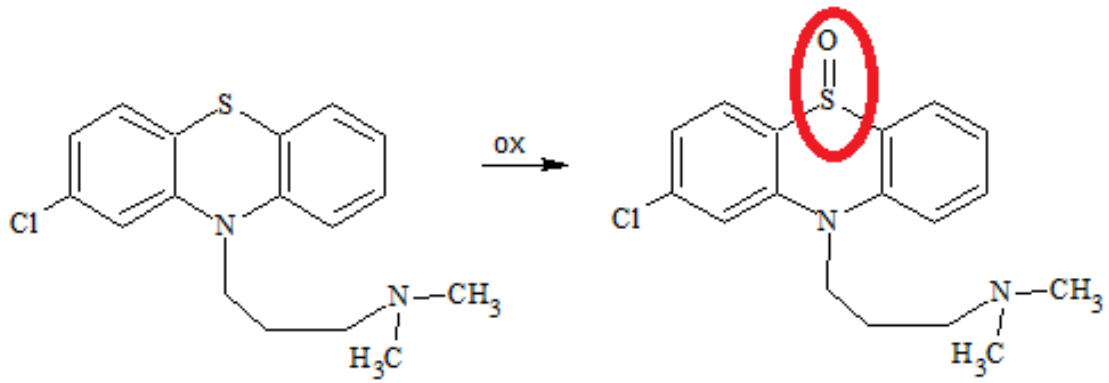
Dayanıksız ara ürün

Fenil aseton

N-Oxidation

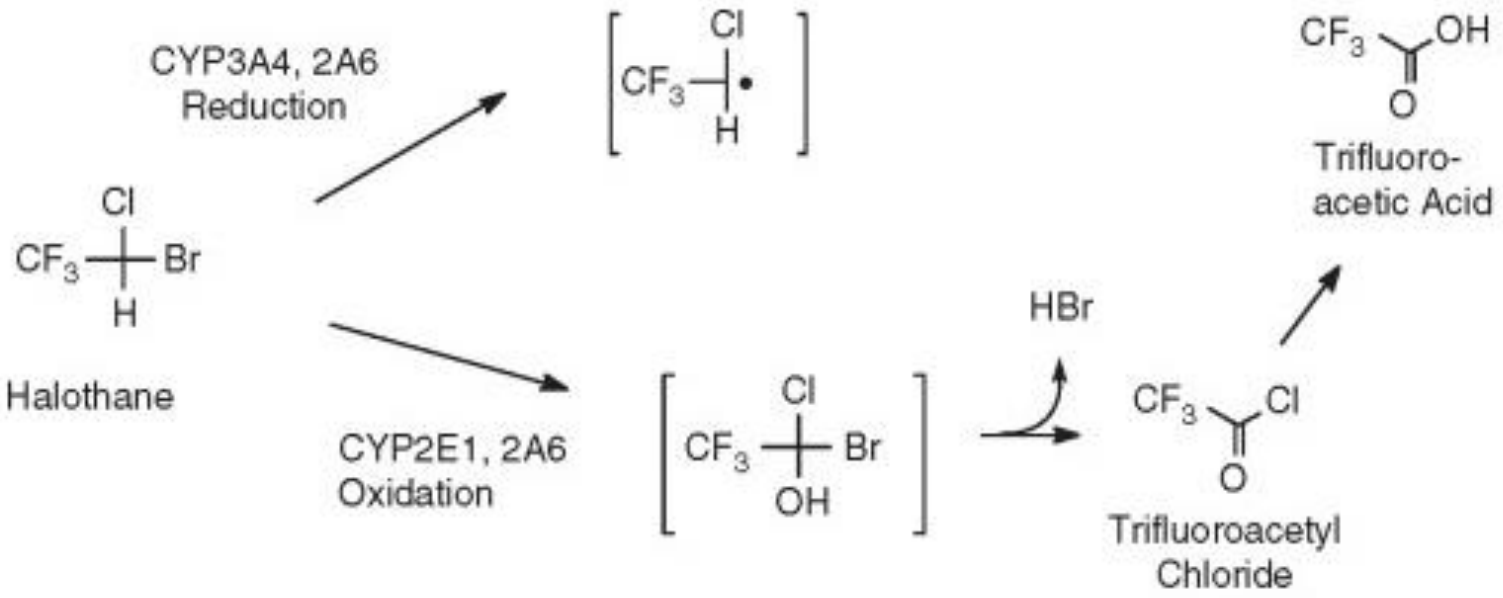


S-Oxidation



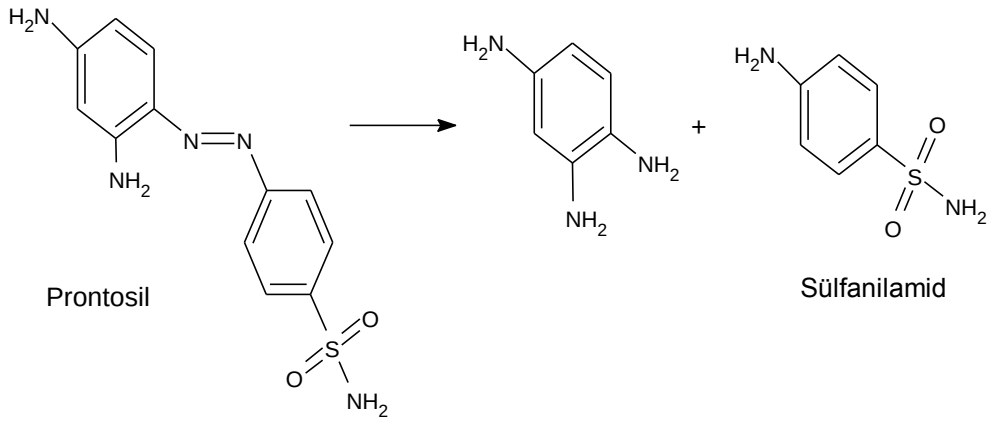
Klorpromazin

Dehalogenation



2- Reduction Reactions

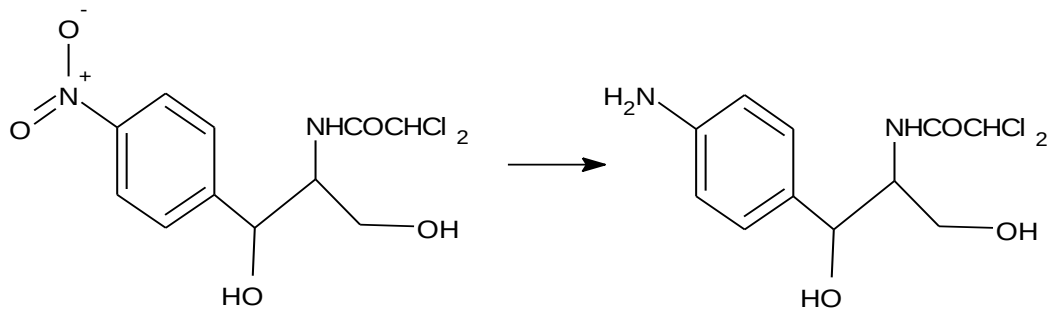
Azo compounds



Prontosil

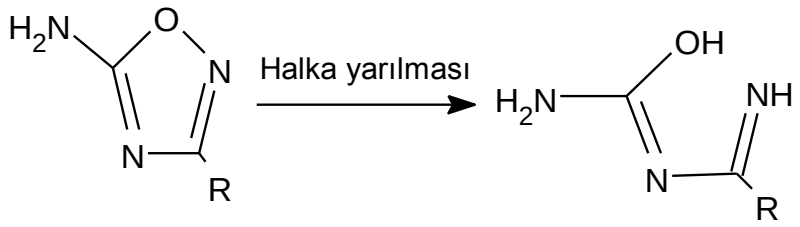
Sülfanilamid

Nitro compounds

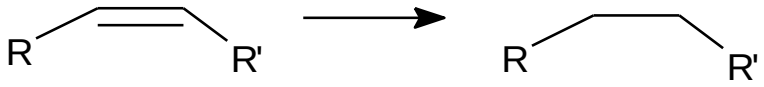


Kloramfenikol

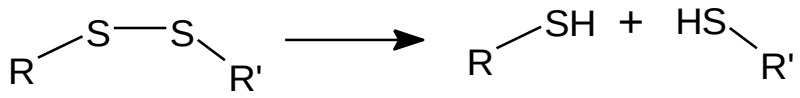
Heterocyclic ring compounds



Double bonds

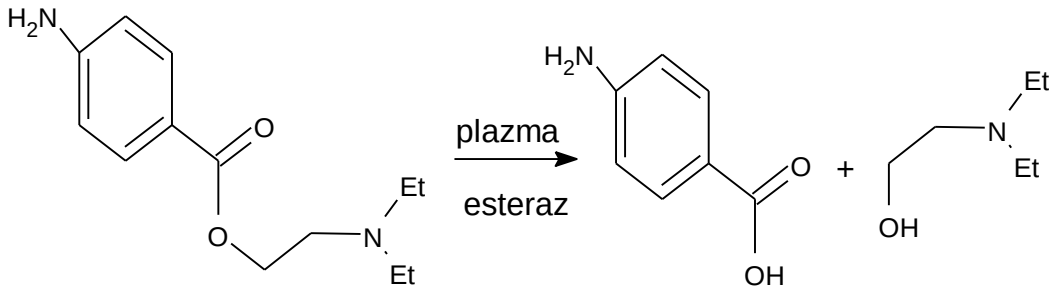


Disulphures



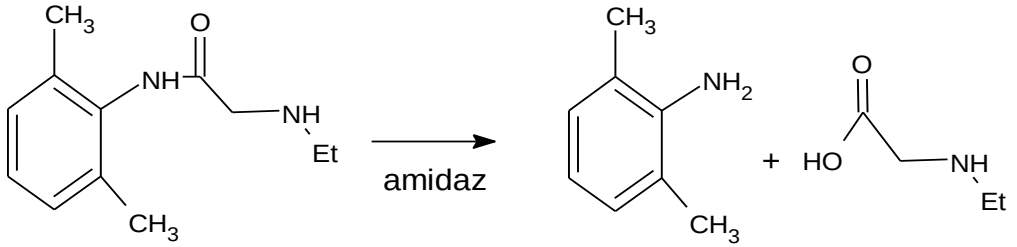
Hydrolysis reactions

Ester hydrolysis



Prokain

Amide hydrolysis



Monoetil glisil ksilid

Ksilidin

Etil glisin