Sympathomimetic agents

These are chemical substances which produce therapeutic action by stimulating the sympathetic nervous system.

Classification

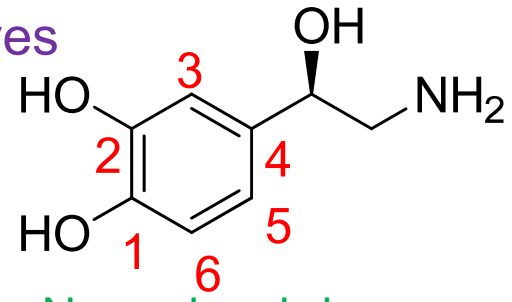
Sympathomimetics are classified into three types based on their mechanism of action

- ❖Directly acting Sympathomimetics
- ❖Indirectly acting Sympathomimetics
- ❖Mixed action Sympathomimetics

Directly acting Sympathomimetics

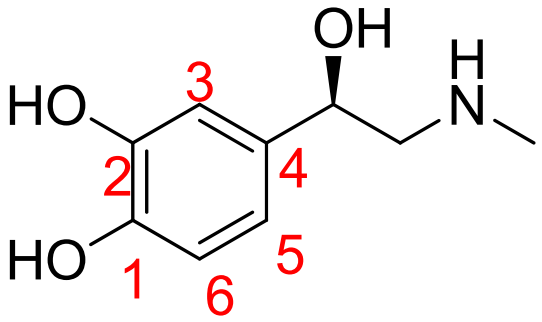
- These drugs show their therapeutic action by directly acting on adreno-receptors like α and β receptor.
- Based on their chemical they are classified further in to two types.

Ethylene amine derivatives



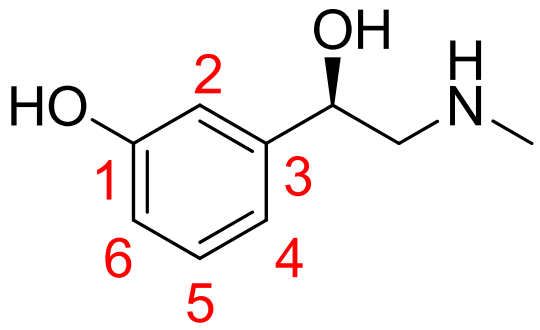
Nor-epinephrine

4-[(1R)-2-amino-1-hydroxyethyl]benzene-1,2-diol



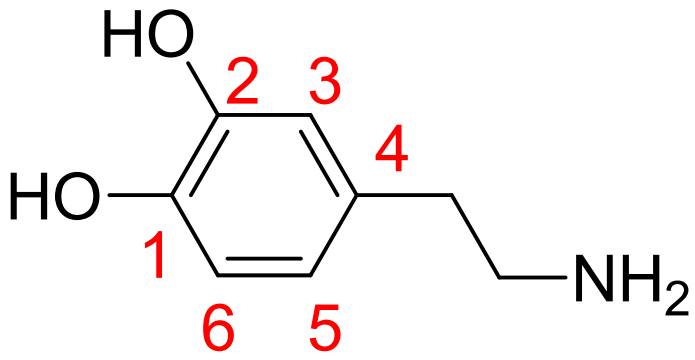
Epinephrine

4-[(1R)-1-hydroxy-2-(methylamino)ethyl]benzene-1,2-diol



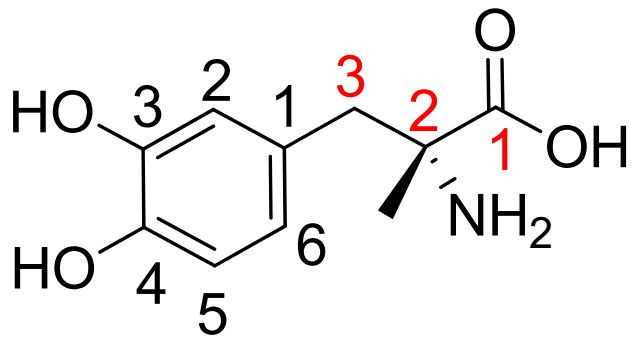
Phenylephrine

3-[(1R)-1-hydroxy-2-(methylamino)ethyl]phenol



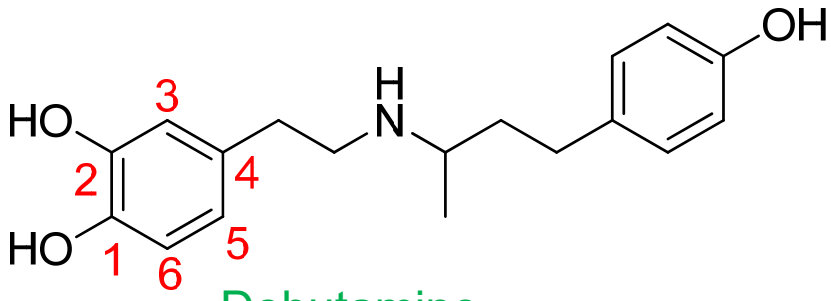
Dopamine

4-(2-aminoethyl)benzene-1,2-diol



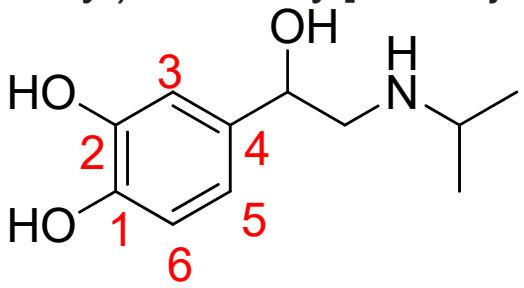
Methyldopa

(2S)-2-amino-3-(3,4-dihydroxyphenyl)-2-methylpropanoic acid



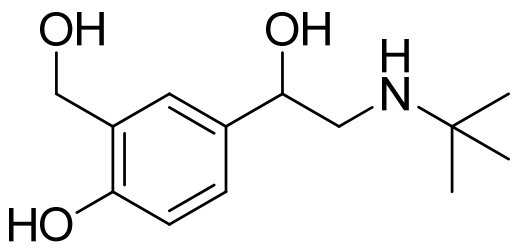
Dobutamine

4-(2-{[4-(4-hydroxyphenyl)butan-2-yl]amino}ethyl)benzene-1,2-diol



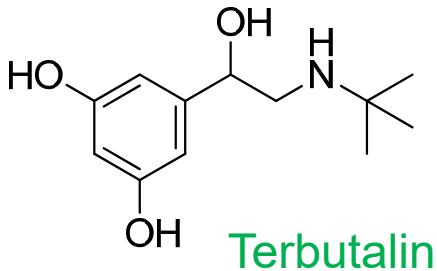
Isoproterenol / Isoprenaline

4-{1-hydroxy-2-[(propan-2-yl)amino]ethyl}benzene-1,2-diol



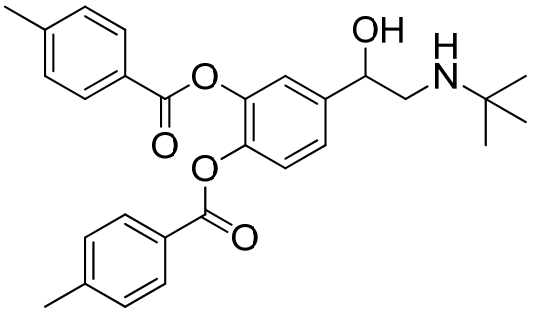
Salbutamol

4-[2-(tert-butylamino)-1-hydroxyethyl]-2-(hydroxymethyl)phenol



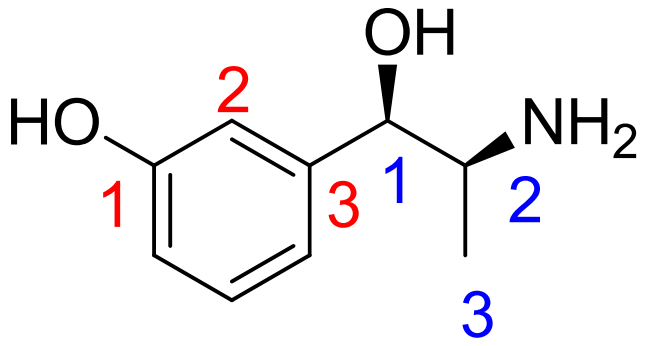
Terbutaline

5-[2-(tert-butylamino)-1-hydroxyethyl]benzene-1,3-diol



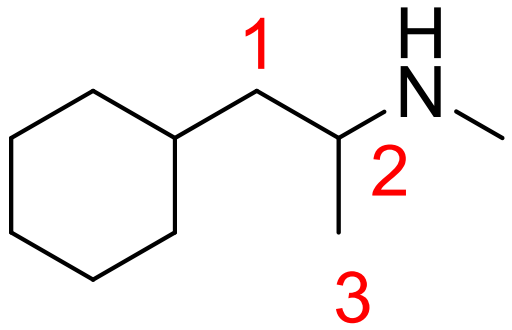
Bitolterol

4-[2-(tert-butylamino)-1-hydroxyethyl]-2-(4-methylbenzoyloxy)phenyl 4-methylbenzoate



Metaraminol

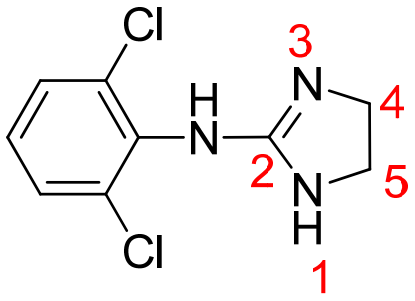
3-[(1R,2S)-2-amino-1-hydroxypropyl]phenol



Propylhexedrine

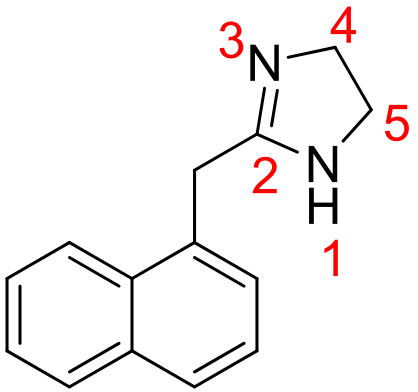
(1-cyclohexylpropan-2-yl)(methyl)amine

Imidazoline derivatives



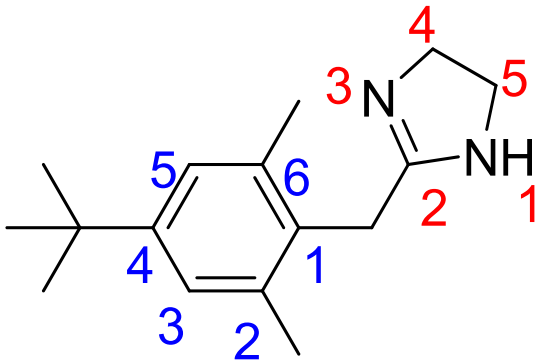
Clonidine

N-(2,6-dichlorophenyl)-4,5-dihydro-1H-imidazol-2-amine



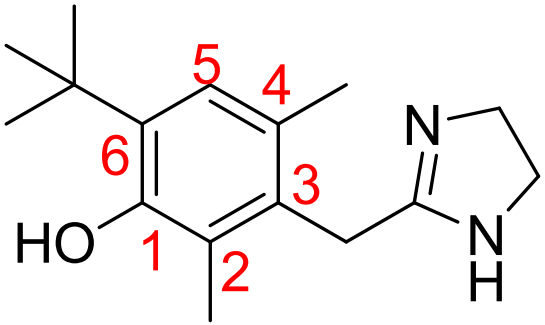
Naphazoline

2-(naphthalen-1-ylmethyl)-4,5-dihydro-1H-imidazole



Xylometazoline

2-[(4-tert-butyl-2,6-dimethylphenyl)methyl]-4,5-dihydro-1H-imidazole

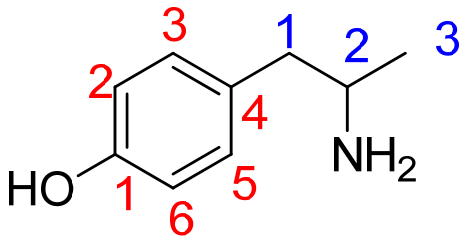


Oxymetazoline

6-tert-butyl-3-(4,5-dihydro-1H-imidazol-2-ylmethyl)-2,4-dimethylphenol

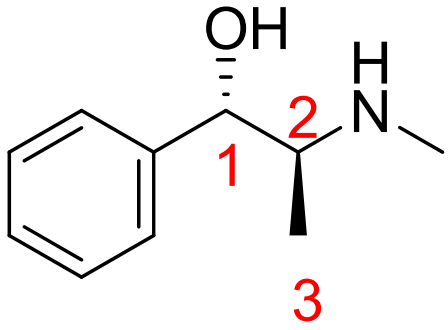
Indirectly acting Sympathomimetics

These drugs act by either releasing noradrenaline from the storage vesicle of the nerve terminals or inhibits the uptake of noradrenaline.



Hydroxyamphetamine

4-(2-aminopropyl)phenol

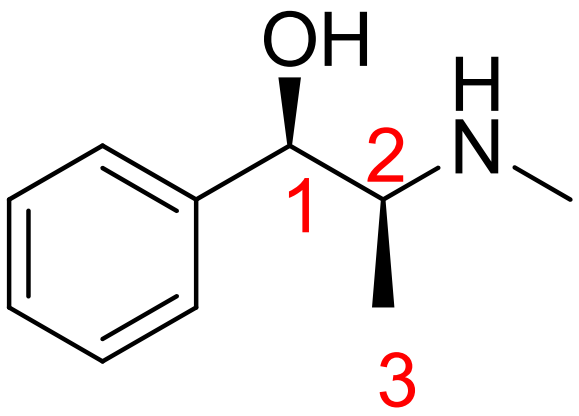


Pseudoephedrine

(1S,2S)-2-(methylamino)-1-phenylpropan-1-ol

Mixed action Sympathomimetics

They act directly as well as indirectly to show their therapeutic action.



Ephedrine

(1R,2S)-2-(methylamino)-1-phenylpropan-1-ol