

MEDICINAL CHEMISTRY-I – BP402T

UNIT: 2

CLASS: 5

TOPIC: SYMPATHOMIMETICS

CLASSIFICATION

They could be classified on two different basis

1. Chemical classification
2. Based on the mechanism of action

CHEMICAL CLASSIFICATION

Based on chemical classification these are of two types

- A. Catecholamines: they contain a catechol nucleus
Adrenaline, noradrenaline
- B. Non catecholamines: they don't contain catechol nucleus
Tyramine, ephedrine

BASED ON MECHANISM OF ACTION

- A. Directly acting
- B. Indirectly acting

Direct acting

These are of three types

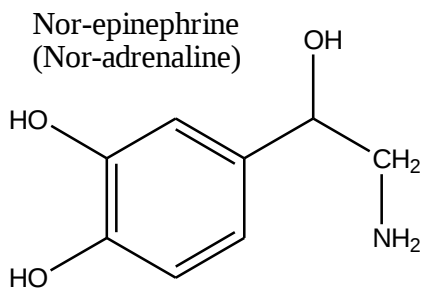
Specific alpha agonist

Specific beta agonist

Mixed alpha and beta agonist

1. Nor epinephrine

Structure

**Iupac name**

1,2-benzenediol 4-(amino ethanol)

Uses

It is a naturally occurring Catecholamine

It is called as a life saving drug.

It's alpha activity is more than beta activity.

It works by constricting the blood vessels and increasing bp and blood glucose levels.

Used to treat life threatening low bp that can occur with certain medical conditions or surgical procedures.

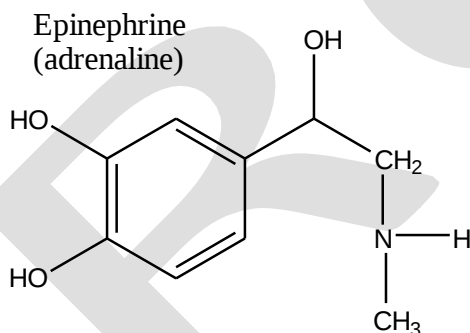
Side effects

Slow or uneven heart rate.

Numbness, weakness or cold feeling anywhere in the body.

Trouble breathing, vision, speech or balance difficulties.

Pain, burning, irritation or skin changes around the injection site.

2. EPINEPHRINE**Structure****Iupac name**

1,2-benzenediol 4-(methyl amino ethanol)

Uses

It is a naturally occurring catecholamine

Acts on both alpha and beta receptors

It acts quickly to improve the breathing, stimulate the heart, raise a fall in BP and reduce swelling of the face, lips and throat.

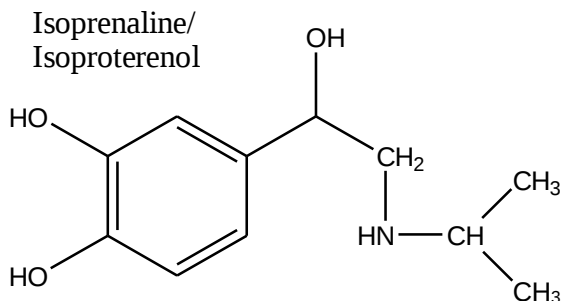
It is also used in emergencies to treat very serious allergies reactions to insect bites, foods, drugs or other substances.

Side effects

Increase in heart beat, nervousness, sweating, nausea, vomiting, dizziness, trouble breathing, anxiety, pale skin may occur.

3. Isoproterenol

Structure



Iupac name

1,2-benzenediol 4-(isomethyl amino ethanol)

Uses

Also called as isoprenaline

It is a synthetic compound

It stimulates beta one and beta two receptors

It's action on alpha receptors is insignificant

Used as IV in case of cardiac arrest, heart block and shock.

Management of bronchospasm during anaesthesia.

Side effects

Similar to epinephrine

As IV injection in case of cardiac arrest, heart block and shock.