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Department:- BS MLT 2nd semester

Paper:- pharmacology

Ans No:-1

Drug Receptor

Drug Receptor is a macromolecules in the membrane or inside the cell that specifically bind a ligand is called drug Receptor.

Receptor families

These Receptor May be divvied into four families

1. Ligand – gated ion channels
2. G protein coupled Receptor
3. Enzyme linked receptor
4. Intracellular Receptor

1. **Ligand-gated ion channels:-**

   The first receptor family comprises ligand-gated ion channels that are responsible for regulation of the flow of ions across cell membranes

The activity of these channels is regulated by the *binding of a ligand to the channel*.

Examples

1. <u>Nicotinic receptor</u>

   Stimulation of the nicotinic receptor by *acetylcholine* results in generation of an action potential, and

activation of contraction in skeletal muscle

1. I 3-aminobutyric acid (GABA) receptor

Stimulation of the GABA receptor by GABA, resulting in and hyperpolarization of the respective cell.

2. G protein coupled Receptor

These receptors are comprised of a single
peptide that has seven membrane-spanning regions, and these receptors are linked to a G protein having three subunits, an α subunit that binds guanosine triphosphate

(GTP) and β, γ subunit.
Binding of the appropriate ligand to the extracellular region of the receptor activates the G protein so that **GTP** replaces guanosine diphosphate (GDP) on the α subunit. Dissociation of the G protein occurs, and both the α GTP subunit and the β, γ subunit subsequently interact with other cellular effectors, usually an enzyme or ion channel. these effectors then change the concentrations of second messengers that are responsible for further actions within the
cell. Stimulation of these receptors results in responses that last several

seconds to minutes. **3.Enzyme linked receptor**

Binding of a ligand to an extracellular domain activates or inhibits this cytosolic enzyme activity.

Duration of responses to stimulation of these receptors is on the order of minutes to hours.

4.Intracellular receptor

This places constraints on the physical and chemical properties of the ligand in that it must have sufficient lipid solubility to be able to move across the target cell membrane.

Ans No:-2

Drug interection

A change in the way a drug acts in the body when taken with certain other drugs , herbals, or foods , or when taken certain medical condition.

Type of drug interection

1. Drug – Drug interection
2. Drug food interection
3. Drug plant interection
4. Drug disease interaction

Explanation pharmacokinetic interection

(A) Altered PH

The non-ionized form of a drug is more lipid soluble and more readily absorbed from GIT than the ionized form does.

Example., antiacids Decrease the tablet dissolution of Ketoconazole (acidic)

(B) Altered intestinal bacterial flora.

Example, 40% or more of the administered digoxin dose is metabolised by the intestinal flora. Antibiotics kill a large number of the normal flora of the intestine Increase digoxin conc. and increase its toxicity

(C) Complexion or chelation

EXample1., Tetracycline interacts with iron preparations or Milk (Ca2+)Unabsorpable complex

(D) Drug induced mucosal damage.

Antineoplastic agents e.g., **cyclophosphamide, vincristine, Procarbazine** Inhibit absorption of several drugs eg., **digoxin**

E) altered motility

Metoclopramide (antiemitic) Increase absorption of **cyclosporine** due to the increase of stomach empting time Increase the toxicity of cyclosporine

F) Displaced protein binding

It depends on the affinity of the drug to plasma protein. The most likely bound drugs is capable to displace others. The free drug is increased by displacement by another drug with higher affinity.

Phenytoin is a highly bound to plasma protein (90%), Tolbutamide (96%), and warfarin (99%)

G) Altered metabolism.

The effect of one drug on the metabolism of the other is well documented. The liver is the major site of drug metabolism but other organs can also do e.g., WBC ,skin ,lung, and GIT. E.g , A drug may induce the enzyme that is responsible for the metabolism of another drug or even itself e.g., Carbamazepine (antiepileptic drug) increases its own Metabolism.

Ans No:-3

General anesthesia

- CNS
- Whole body

- Lost
- Essential
- Risky
- Possible
- Preferred
- Not preferred

Local anesthesia

- Peripheral nerves
- Restricted area
- Unaltered
- Usually not needed
- Safer
- Not possible
- Connot be preferred
- Preferred

Stages of anesthesia

Stage 1 analgesia

The patient has decreased awareness of pain, sometimes with amnesia. Consciousness may be impaired but is not lost

Stage 2 disinhibition

The patient appears to be delirious and excited. Amnesia occurs, reflexes are enhanced, and respiration is typically Irregular; retching and incontinence may occur.

Stage 3 surgical anesthesia

The patient is unconscious and has no pain reflexes; respiration is very regular, and blood pressure is maintained.

Stage 4 medullary depression

The patient develops severe respiratory and cardiovascular depression that requires mechanical and pharmacologic support.

Ans No:-4 (A)

Heart failure,

The chronic in progressive condition where the heart muscle is unable to pump enough for blood in oxygen.

Pathophysiology of heart failure.

Pathophysiology of heart failure brings together leading basic scientist and clinician's, presenting new approaches to this complex problem involving cardiomyopathic process in ischemia perfusion injury.

4:- (B)

Drug used for the treatment of heart failure

Drug names are given below

- Beta blocker
- Ace inhibiters’
- Glycosides
- Diuretics

Mechanism of heart failure

Heart failure begins after an index event produces an initial decline in pumping capacity of the heart. After this initial decline in pumping capacity of the heart, a variety of compensatory mechanisms are activated, including the adrenergic nervous system, the renin-angiotensin system, and the cytokine system.

Ans No:-5(A)

Difference between broad spectrum and narrow spectrum antibiotic

Broad spectrum:-

Active on a large number of bacterial species.

- Empric treatment of non document infection.

Narrow spectrum

Active on small number of bacterial species.

- Targeted of document infection

Classification of antibiotic

1. **Sulfonamides**

- Sulfamethoxazole

- Dulfadiazine
- Sulfametho+ trimethoprim etc

2. Quinolones fluro-Quinolones

- Nalidixic a
- Enoxacin
- Norfluxacin
- Ciprofluxacin
- Ofluxacin
- Levo-fluxacin

3. B-lactam

- Pencillin
- Ampillicin
- Amoxicillin

4. Tetracycline

- Doxycycline
- Other

5. **Macrolides**
    - Erythromycin
    - Azithromycin
    - Clindamycin
6. **Aminoglycosides**
    - Streptomycin
    - Neomycin
    - Gentamycin
    - Kanamycin etc

5:- No (B)

Mechanism of action of antiviral agent

Unlike other antimicrobials, antiviral drugs do not deactivate or destroy the microbe (in this case, the virus) but act by inhibiting replication. In this way, they prevent the viral load

from increasing to a point where it could cause pathogenesis, allowing the body's innate immune mechanisms to neutralize the virus.