PrepLadder

Last 5 Year PYQs in Pharmacology for NEET PG

Q1. Which one of the following substances acts as a suppressor of DNA synthesis?

A. 6-mercaptopurine
B. Mitomycin
C. Actinomycin
D. Asparaginase

Ans. 1) 6-mercaptopurine:

- At clinically established doses, 6-MP is administered orally as a prodrug. It is metabolized by hypoxanthine guanine phosphoribosyl transferase (HGPRT) to form 6-thioguanine nucleotides (6-TGNs). These nucleotides are then integrated into DNA and RNA, leading to the arrest of DNA replication and causing cytotoxicity.

Q2. A patient on lithium developed hypertension. He was started on thiazides for hypertension. After a few days, he developed coarse tremors and other symptoms suggestive of lithium toxicity. Explain the likely mechanism of this interaction

A. Thiazide inhibits the metabolism of lithium
B. Thiazides act as an add-on drug to lithium
C. Thiazides increase the tubular resorption of lithium
D. Thiazides cause water loss, thereby increasing lithium levels

Ans. 3) Thiazides increase the tubular resorption of lithium.

- The likely mechanism of interaction between thiazides and lithium in this case is that thiazides increase the tubular resorption of lithium in the kidneys.
- Thiazide diuretics are commonly used to treat hypertension by promoting diuresis O (increased urine production) and reducing fluid volume in the body. However, one of the side effects of thiazides is that they decrease the excretion of certain substances, including lithium, through the kidneys.
- Lithium is a medication commonly used to stabilize mood in conditions such as bipolar disorder. It is primarily eliminated from the body through the kidneys. When thiazides are administered concurrently with lithium, they can interfere with the renal clearance of lithium by increasing its tubular resorption.

- As a result, the elevated levels of lithium in the blood can lead to symptoms of lithium toxicity, which may include coarse tremors, gastrointestinal disturbances, confusion, and other neurological symptoms.

Q3. Which one of the following medications should not be recommended in conjunction with theophylline?

A. Erythromycin
B. Cefotaxime
C. Cotrimoxazole
D. Amoxicillin

Ans. 1) Erythromycin

- Among the options provided, erythromycin should not be prescribed with theophylline due to a significant drug interaction.
- Erythromycin is an antibiotic that can inhibit the metabolism of theophylline by blocking the activity of an enzyme called cytochrome P450 3A4 (CYP3A4). Theophylline is primarily metabolized by CYP3A4, and when its metabolism is inhibited by erythromycin, the levels of theophylline in the blood can increase significantly.
- This interaction can lead to theophylline toxicity, which can cause symptoms such as nausea, vomiting, rapid heartbeat, tremors, and seizures. Therefore, it is generally recommended to avoid concomitant use of erythromycin and theophylline.

Q4. Which drug amongst the options has a tendency to accumulate in the cornea?

A. Leflunomide
B. Chloroquine
C. Methotrexate
D. Sulfasalazine

Ans. 2) Chloroquine

- Among the options provided, chloroquine is the drug that can get deposited in the cornea.
- Chloroquine is an antimalarial medication that is also used in the treatment of certain autoimmune diseases, such as rheumatoid arthritis and lupus. Prolonged or high-dose use of chloroquine can lead to a condition known as chloroquine keratopathy. This condition is characterized by the deposition of the drug in the cornea, specifically in the corneal epithelium and endothelium.

Q5. A male patient with chronic obstructive pulmonary disease (COPD) was prescribed theophylline. He noticed that his urine output had increased the following day. This action of the drug is mediated through which of the following receptors?

A. Interleukin-10
B. Histone deacetylase
C. Adenosine A1
D. Beta 2 adrenergic receptors

Ans. 3) Adenosine A1

- The increased urine output observed in the patient with COPD after taking theophylline is likely due to the drug's action on adenosine receptors. Theophylline is a non-selective adenosine receptor **antagonist**, meaning it blocks the action of adenosine at all types of adenosine receptors, including A1, A2A, A2B, and A3 receptors.
- Adenosine A1 receptors are found in the kidneys and are involved in regulating water and electrolyte balance. By blocking adenosine A1 receptors, theophylline can lead to increased urine production and diuresis. Therefore, the answer is adenosine A1 receptors.

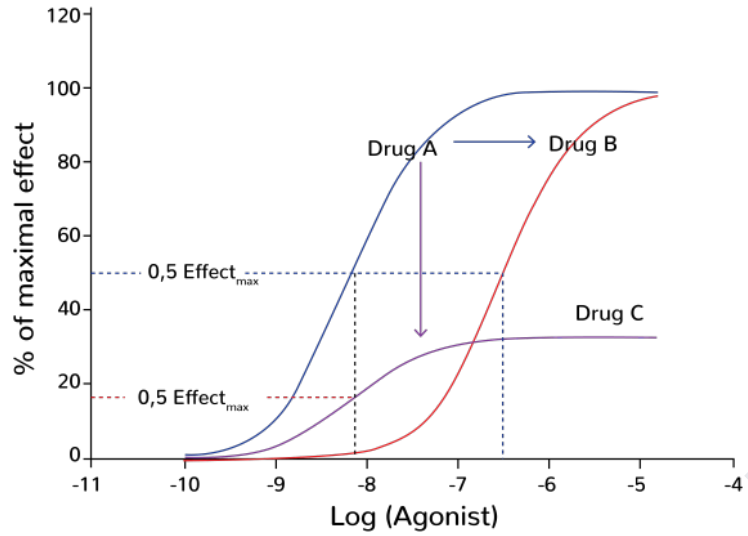
Q6. Which of the following drugs is not likely to cause pulmonary fibrosis?

A. Metformin
B. Methysergide
C. Bleomycin
D. Nitrofurantoin

Ans. 1) Metformin

- Metformin is a drug that is commonly used to treat type 2 diabetes.
- Increase insulin sensitivity (biguanides)
- **Mechanism**: inhibit, which inhibits hepatic gluconeogenesis and the action of glucagon. Increase glycolysis, peripheral glucose uptake (increase insulin sensitivity).
- **Adverse effects:** GI upset, lactic acidosis (use with caution in renal insufficiency), vitamin B12 deficiency. Weight loss (often desired).
- It does not cause pulmonary fibrosis.

Q7. Which of the following statements is true regarding the dose-response curve shown in the image below?



A. C is competitive antagonist
B. C is more potent than A
C. B is more potent than A
D. B is competitive antagonist

Ans. 4) B is competitive antagonist

- In competitive antagonism, as also seen above in the graph, the DRC is shifted to the right, whereas in non-competitive antagonism the DRC is flattened.
- Thus, in the above image, drug B is the competitive antagonist, while drug C is the non-competitive antagonist.

Q8. Which of the following antiglaucoma medications is unsafe in infants?

A. Timolol
B. Brimonidine
C. Latanoprost
D. Dorzolamide

Ans. 2) Brimonidine

- Brimonidine is an **alpha-2 adrenergic agonist** used in the **treatment of glaucoma.** However, it has been associated with serious adverse effects, such as **central nervous system depression, hypotension , and apnea in infants.** Due to these risks, brimonidine is generally considered **unsafe in infants.**

Q9. The apparent volume of distribution of a drug is very high (6L/kg). Which of the following is true regarding the distribution of that drug?

A. Highly bound to plasma proteins
B. Confined to vascular compartment
C. Sequestered in body tissues
D. Both A and B

Ans. 3) Sequestered in body tissues

- A high apparent volume of distribution suggests that the **drug is extensively distributed beyond the vascular compartment and is sequestered in body tissues.**
- It indicates that the drug has a **tendency to distribute widely throughout the body, beyond the plasma and blood vessels.**

Q10. Which phase of a clinical trial is primarily focused on assessing the preliminary efficacy and determining the optimal dose of a drug?

A. Phase 1
B. Phase 2
C. Phase 3
D. Phase 4

Ans. 2) Phase 2

- Concentrates on assessing the preliminary efficacy of the drug and determining the optimal dose.
- It involves a larger group of patients (usually several hundred) and provides initial data on how well the drug works and its side effects.

Q11. What is the drug of choice for diphtheria carrier states?

A. Amoxicillin
B. Erythromycin
C. Rifampicin
D. Tetracycline

Ans. 2) Erythromycin

- Erythromycin is the **drug of choice for the diphtheria carrier state.** It is effective against the **Corynebacterium diphtheriae** bacterium responsible for diphtheria. Erythromycin is **typically used to treat carriers** to prevent the spread of the disease to others, as carriers can still transmit the bacteria even if they do not exhibit symptoms of the disease.

Q12. Which of the following medications is most commonly used for maintenance therapy in opioid withdrawal?

A. Buprenorphine
B. Naloxone
C. Naltrexone
D. Acamprosate

Ans. 1) Buprenorphine

- Buprenorphine is a partial opioid agonist that is commonly used in maintenance therapy for opioid dependence. It helps manage withdrawal symptoms and cravings by binding to the same opioid receptors in the brain that full agonists like heroin or methadone do but with a ceiling effect that reduces the risk of misuse, respiratory depression, and overdose. Buprenorphine can be used alone or in combination with naloxone (as in Suboxone) to further deter misuse. It is an effective and widely used medication for maintenance therapy in opioid use disorder.

Q13. A hypertensive patient stopped antihypertensive medication due to dry eyes, dry mouth, and constipation. After stopping the drug, he developed hypertensive emergency (BP > 180/120). Most likely drug is

A. Clonidine
B. Lisinopril
C. Amlodipine
D. Telmisartan

Ans. 1) Clonidine

- Clonidine is an alpha-2 adrenergic agonist used to treat hypertension. It works by decreasing sympathetic outflow, which lowers blood pressure. When clonidine is stopped abruptly, it can lead to a rebound increase in blood pressure, potentially causing a hypertensive emergency. Symptoms like dry eyes, dry mouth, and constipation are common side effects of clonidine. Therefore, the development of a hypertensive emergency after stopping clonidine is consistent with its withdrawal effects.

Q14. Example of SNRI antidepressant drug

A. Reboxatine
B. Tramadol
C. Paroxetine
D. Bupropion

Ans. 1) Reboxetine

- Reboxetine is a selective norepinephrine reuptake inhibitor (NRI) and is used as an antidepressant. It affects norepinephrine reuptake exclusively and does not significantly impact serotonin levels.

Q15. Drug for HIV-induced lipodystrophy

A. Tesamorelin
B. Somatropin
C. Octreotide
D. Pegvisomant

Ans. 1) Tesamorelin

- Tesamorelin is a synthetic growth hormone-releasing hormone (GHRH) analog that is used specifically for reducing abdominal fat in patients with HIV-associated lipodystrophy. It works by stimulating the release of growth hormone, which helps to reduce visceral fat accumulation. It is the primary medication approved for this indication.