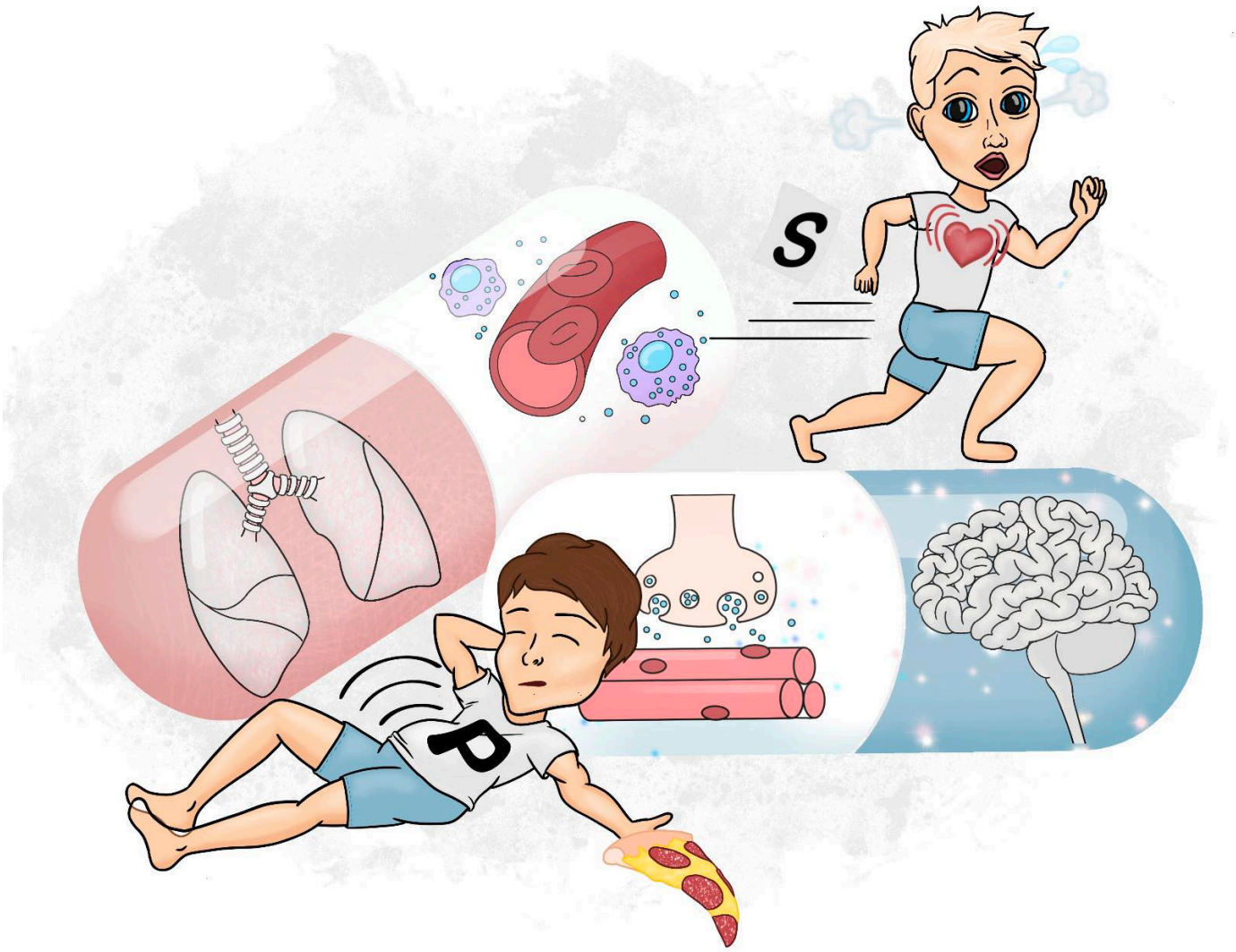

Pharmacology Answer Key

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STUDY AID - TEST YOURSELF - MID 1

2.4 – Test Yourself

1) Where are typically muscarinic M_1 receptors found?

a) Lungs and heart

b) Nerve endings

c) CNS

d) Smooth muscles

2) Which neurotransmitter do adrenergic receptors react to?

a) Acetylcholine

b) Nicotine

c) Epinephrine

d) Muscarine

3) How many subtypes of α receptors exist?

a) α_1,α_2 and α_3

b) α_1 only

c) α_1 and α_2

d) α_2 only

3.5 - Test Yourself

1) How do muscarinic receptor agonists effect the respiratory system?
Ans: By causing bronchoconstriction and increasing mucus secretion.

2) What is the clinical use of pilocarpine?
a) Acute closed angle glaucoma
b) Excessive sweating
c) Constipation
d) Chronic open angle glaucoma

3) Which one of these cholinesterase inhibitors cross the blood-brain-barrier?
a) Edrophonium
b) Physostigmine
c) Pyridostigmine
d) Neostigmine

4) Explain the difference between a myasthenic crisis and a cholinergic crisis.
Ans: In cholingergic crisis patient is not receiving adequate doses of the drug, and the muscle weakness is caused by acetylcholine deficiency. In cholinergic crisis the muscle weakness is caused by an excessive amount of acetylcholine at the junction.

5) Which of these can be used in organophosphate poisoning?
a) Pilocarpine
b) Edrophonium
c) Atropine
d) Muscarine

4.3 – Test Yourself

1) Which dietary amino acid is norepinephrine derived from?
Ans: Tyrosine

2) Which statement is correct?
a) At low doses epinephrine causes more vasoconstriction (α effects) than vasodilation (β effects).
b) At low doses epinephrine causes more vasodilation (β effects) than vasoconstriction (α effects).
c) At high doses of epinephrine, vasodilation predominates.
d) At low doses of epinephrine, vasoconstriction predominates.

3) What does it mean when a drug has positive inotropic effects?
Ans: Increases contractility.

4) What does it mean when a drug has positive chronotropic effects?
Ans: Increases heart rate.

5) Which of these findings would most likely be seen in a person who has taken alpha blockers?
a) Bradycardia
b) Tachycardia
c) High blood pressure
d) Nothing

6) Name the selective beta-blockers.
Ans: Metoprolol, atenolol, nebivolol, bisoprolol, acebutolol, betaxolol, esmolol.

5.9 - Test Yourself

1) What are the three main differences between first- and second-generation antihistamines?
Ans: Sedative effects, block of autonomic receptors and time of action.

2) What is the first-line treatment of migraine?
a) Propranolol
b) Sumatriptan
c) Cetirizine
d) Omaprazole

3) What is the drug ondansetron used for?
Ans: Antiemetic

4) Which drug class is the most common cause of serotonin syndrome?
a) SSRI
b) Triptans
c) TCA
d) MOA-inhibitors

5) What is a specific side effect of ACE inhibitors? And why?
Ans: Dry cough due to increase in bradykinin

6) Which drugs can be used to maintain a patent ductus arteriosus?
a) NSAIDS
b) Beta-blockers
c) 1st generation antihistamines
d) Prostaglandin

7) What are leukotriene antagonists used for?
Ans: Asthma

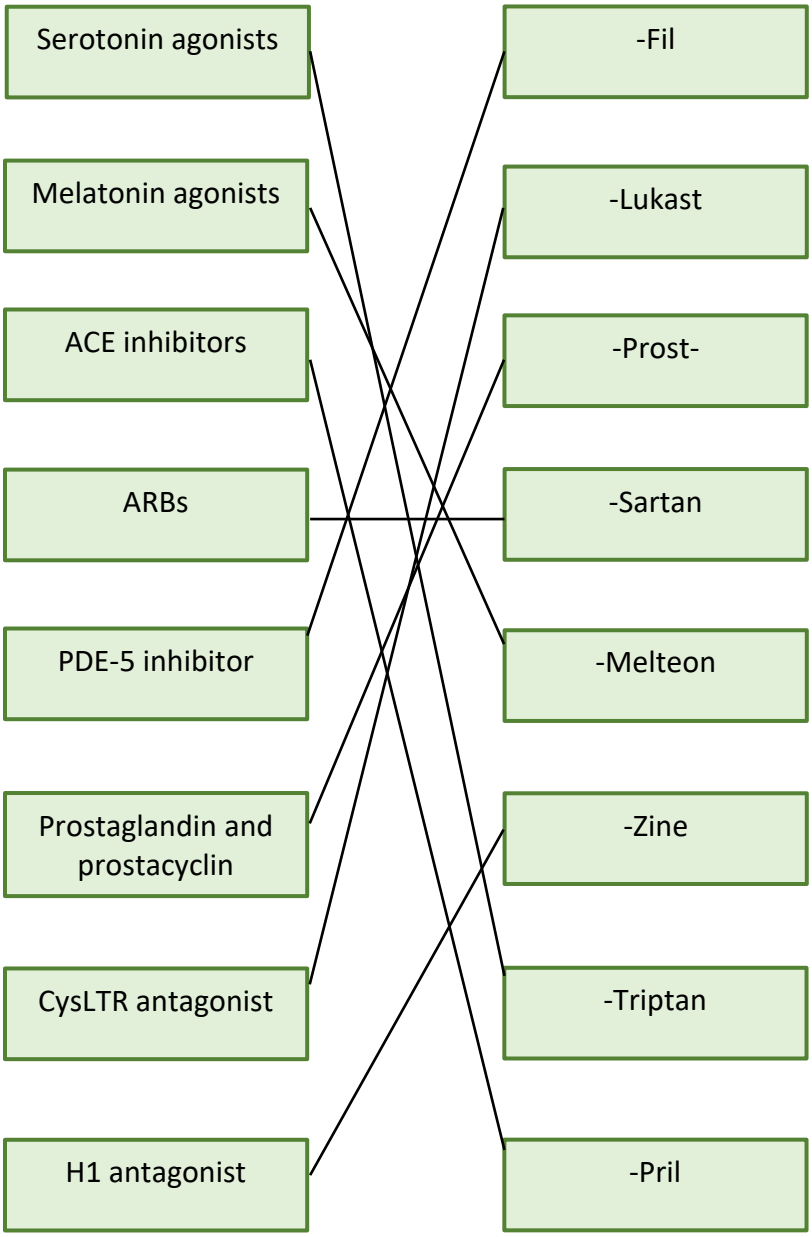
8) What is the first-line drug for erectile dysfunction?
a) Alprostadil
b) Sildenafil
c) Yohimibine
d) Clonidine

9) What is the mechanism of zafirlukast?
Ans: CysLT receptor antagonist

10) Which peptide is the cause of hereditary angioedema?
a) Bradykinin
b) Serotonin
c) Acetylcholine

d) Histamine

11) Drag a line between the drug class and the suffix



6.5 - Test yourself

1) Choose correct statement regarding nonsteroidal anti-inflammatory drugs
a) Act by inhibiting phospholipase A2
b) Act by inhibiting the cyclooxygenase enzymes
c) Act by inhibiting lipoxygenase
d) Increase the amount of prostaglandins

2) Why is aspirin contraindicated in children?
Ans: Reye syndrome.

3) What is the mechanism of action of probenecid?
a) Lowering serum uric acid
b) Increasing serum uric acid
c) Increasing the excretion of uric acid in urine.
d) Decreases the production of uric acid.

4) What is the mechanism of action of allopurinol?
Ans: Decreases the production of uric acid.

5) Which of these drugs disrupts microtubules and inhibits the motility of leukocytes?
a) Colchicine
b) Pegloticase
c) Probenecid
d) Leflunomide

STUDY AID - TEST YOURSELF - MID 2

2.8 - Test Yourself

1. What is the antidote to benzodiazepines?

a) Naloxone

b) Flumazenil

c) Tramadol

d) Aspirin

2. Which drug is not used in the treatment of generalized tonic-clonic seizures?

a) Valproate

b) Carbamazepine

c) Phenytoin

d) Pregabalin

3. Which local anesthesia can only be used for topical anesthesia?

a) Bupivacaine

b) Lidocaine

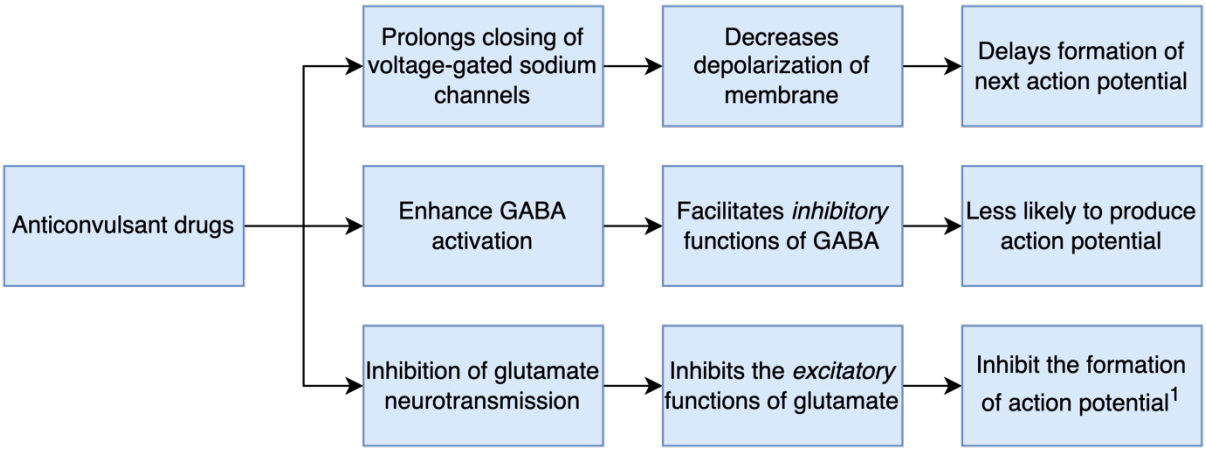
c) Prilocaine

d) Cocaine

4. How is the potency of inhalational anesthetics measured?

Ans: Minimal alveolar concentration (MAC). The lower MAC is, the more potent is the anesthetic.

5. Describe the actions of anticonvulsant drugs?



6. What is the first-line drug for all seizures?

a) Phenytoin

b) Barbiturates

c) Benzodiazepines

e) Valproate

7. What is the first-line drug for depression?

a) SSRI

b) Clozapine

c) TCA

d) Valproate

8. Which phase of bipolar disorder is treated with lithium?

a) Manic phase

b) Depressive phase

9. Which anesthetic can cause dissociative anesthesia?

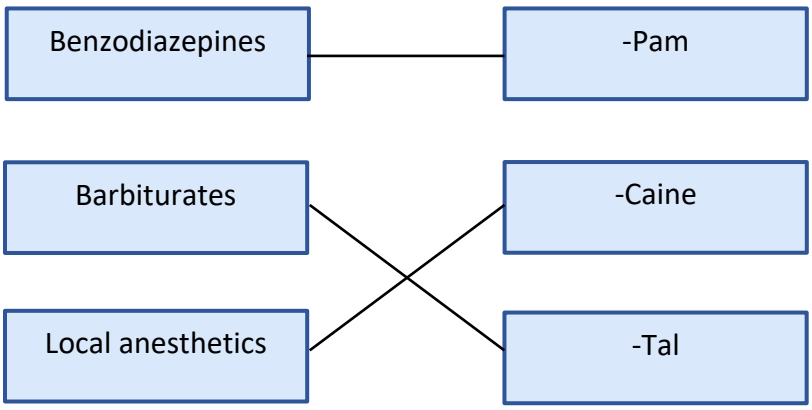
a) Propofol

b) Etomidate

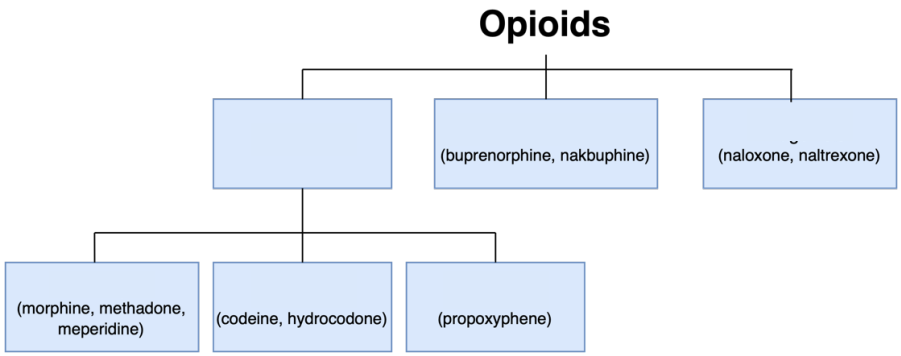
c) Barbiturate

d) Ketamine

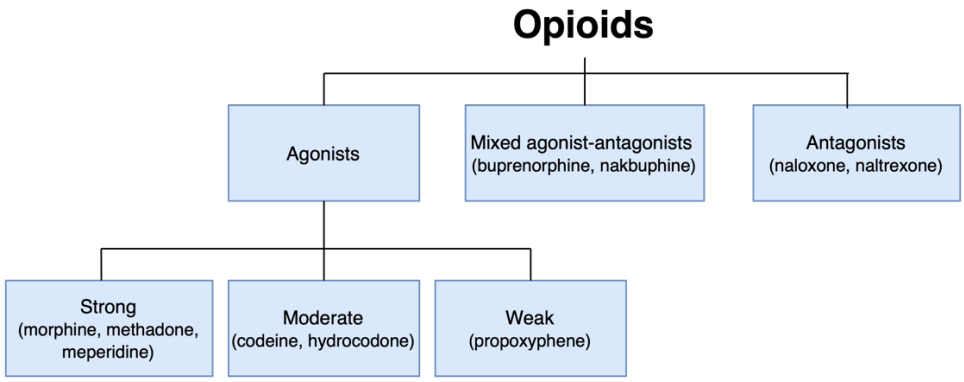
10. Drag a line between the drug class and the suffix



11) Fill in the correct opioid classification.



Ans:



12) A patient presents to the doctor experiencing itching, hives and swelling after ingestion an opioid for pain relief. Do the patient have to find another analgesic than opioids to treat their chronic pain?

Ans: No, the patient is having an allergic reaction to the specific opioid given for chronic pain and needs to change prescription to an opioid of a different chemical class.

13) Match the duration of action with the correct strong opioid?

1)	Morphine	a)	4h
2)	Remifentanyl	b)	1h
3)	Methadone	c)	4 min
4)	Fentanyl	d)	8h

Ans: 1a, 2c, 3d, 4b

14) What other analgesic is moderate opioid agonists usually combined with?

a) Paracetamol

b) NSAIDs

c) Tramadol

d) Local anesthetics

15) Which of the following mixed opioid agonist-antagonists IS NOT an κ-receptor agonist?

a) Buprenorphine

b) Butorphanol

c) Nalbuphine

d) Pentazocine

16) Why do first-responders use naloxone instead of naltrexone when treating an opioid overdose?

a) Naloxone can be administered as a nasal spray.

b) Naloxone has a short half-life and may need repeated doses.

c) Naltrexone has high oral bioavailability and is used long-term to treat opioid addicts.

d) All of the above

3.8 - Test Yourself: Neurodegenerative Diseases

1) Match the drug with the correct mechanism of increasing dopamine levels:

1) Selegiline	a) Increase dopamine synthesis
2) Levodopa	b) Increase amount of levodopa that enters the brain
3) Carbidopa	c) Increase dopamine release from neurons
4) Amantadine	d) Inhibit dopamine breakdown

Ans: 1d, 2a, 3b, 4c

2) Why are dopamine receptor agonists (e.g. apomorphine) useful in advanced cases of Parkinson's?

a) They provide immediate relief fromt symptoms.
b) They do not need a functional dopaminergic neuron to produce an effect.
c) They slow down progression by protecting dopaminergic neurons from further damage.
d) They never cause side effects.

3) Which dopamine receptor agonists are D_2 and D_3 receptor agonists?
a) Pramipexole and Rotigotine
b) Rotigotine and Ropinirole
c) Bromocriptine and Pramipecole
d) Bromocriptine only

4) Which toxicity is seen only in rivastigmine, not the other central acetylcholinesterase inhibitors?
a) Bradycardia
b) Nausea + vomiting
c) GI bleeding
d) Weight loss + anorexia

5) Fill in the blanks in the information about Huntington Disease:
Ans:

- An autosomal dominant disorder with involuntary "dancing" movements (_____) and often psychosis or dementia.
- The GABA function in the brain is _____ and the dopaminergic functions _____.

- An autosomal dominant disorder with involuntary "dancing" movements (chorea) and often psychosis or dementia.
- The GABA function in the brain is diminished and the dopaminergic functions enhanced.

6) Which of the MS drugs have a risk of hepatic toxicity
a) Prednisone
b) Fingolimod
c) Teriflunomide
d) Interferon beta-1b

7) Fill in the blanks:

	Clinical
Dalfampridine	_____
	↓ rate of relapses and slow progression of disease.
Interferon beta (β)-1b	↓ frequency of relapses + ↓ number of new lesions
	↓ duration of relapse + ↓ MS flare symptoms.
Teriflunomide[1]	↓ _____ and slow progression of disease.
Dimethyl fumarate	↓ stress, demyelination and nerve cell inflammation.

Ans:

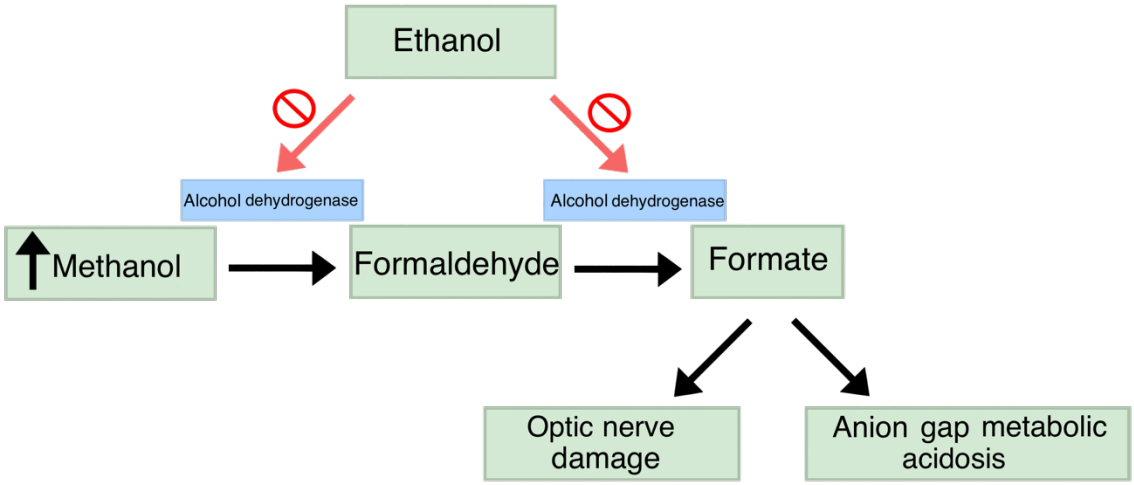
	Clinical
Dalfampridine	Improve walking
Fingolimod	↓ rate of relapses and slow progression of disease.
Interferon beta (β)-1b	↓ frequency of relapses + ↓ number of new lesions
Prednisone	↓ duration of relapse + ↓ MS flare symptoms.
Teriflunomide[1]	↓ rate of relapses and slow progression of disease.
Dimethyl fumarate	↓ stress, demyelination and nerve cell inflammation.

8) Which drug is the only drug that is specifically approved for treating ALS (Lou Gehrig disease)?
Ans: Riluzole

9) Which drug treats chronic spasticity?
a) Cyclobenzaprine
b) Baclofen
c) Orphenadrine
d) Methocarbamol

4.5 – Test yourself: Drugs for Abuse

1) Fill in the blanks:



2) Why is Flunitrazepam ("roofies"/Rohypnol) used as a "date rape drug"?

a) Causes memory loss and sedation
b) Causes euphoria, making victims susceptible to coercion
c) Tasteless and fast onset
d) Increases libido and lowers inhibition
e) All of the above

3) What does THC stand for?

a) Trihydrocannabinol
b) Tetrahydrocannabidiol
c) Terpenehydrocannabinol
d) Tetrahydrocannabinol

4) How do hallucinogens work?

Ans: They primarily work by binding to serotonin receptors in the brain which leads to altered neurotransmitter activity and communication between neurons.

5) Which hallucinogen/s can cause delirium?

a) LSD
b) Mescaline
c) Psilocybin
d) PCP
e) All of them