DRUGS

Definition: They are exogenous substances that enter the body inhalation, injection or orally.

They are the neurotransmitters activity

Relation Between Drugs and Neurotransmitters:

Agonistic: Same function, it facilitates/ enhances or prolongs the effect of the neurotransmitter.

Antagonist: Opposite function, it blocks/ inhibits/ prevents/ hinders the normal action of the neurotransmitter.

REMARK:

- ➔ Algesic: Causes pain
- ➔ Analegsic: Reduces pain

1) Curare and Ach:

Curare: Exo, Relax, Blocks, Inhibit

Ach: Contract, Endo

Relation: Antagonistic

Location: Neuro-muscular synapse (Motor and plate)

Mode of action (explanation):

Curare has the same 3D structure as Ach, it occupies Ach receptors causing the relaxation of the muscle

Conclude Mode of Action: Curare block Ach receptors causes muscle relaxation.

2) Cocaine and Dopamine:

Cocaine: Exo, Pleasure sensation

Dopamine: Endo, Pleasure sensation

Relation: Agonistic

Location: Neuro-neural synapse

Mode of Action:

In normal, dopamine is released for a few seconds giving the person pleasure feeling for a short time then reabsorbed very quickly, on the

other hand cocaine prevents its reabsorption which facilitates its prolonged fixation which in turn prolongs its pleasure feeling.

Conclusion of Mode of Action:

Cocaine blocks the reuptake of dopamine by reuptake pump.

3) Amphetamine and Dopamine:

Amphetamine: Exo

Dopamine: Endo

Relation: Agonistic

Location: Neuro-neural synapse

Mode of Action:

In normal cases, dopamine is released for a few seconds giving the person pleasure feeling from a short time then reabsorbed very quickly, while amphetamines facilitate the exocytosis of dopamine causing an increase of pleasure and hyperactivity for a longer duration.

Conclusion of Mode of Action:

Amphetamines facilitate the exocytosis of dopamine causing an increase of pleasure and hyperactivity for a longer duration.

4) Morphine and Enkephalin:

Morphine: Endo

Enkephalin: Endo

Relation: Agonistic

Location: Neuro-neural

Mode of Action:

Morphine has some 3D structure as enkephalin, it occupies enkephalin receptors leading to the complete inhibition of exocytosis of substance P causing total suppression of pain sensation.

Conclusion of Mode of Action:

Morphine binds to enkephaline receptors which leads to the total inhibition of exocytosis of substance P.

REMARKS:

- Nature: - Excitatory
  - Inhibitory

- Structural nature: → Neuro-neural
  → Neuro-muscular
  → Neuro-glandular

- Effect: → Inhibits/Blocks/Stops…
  → Activates/ Provokes…

- Drug sitting on receptor → 3D Structure

NOTES:

Case 1: Drug and Nt are antagonistic (opposite function)

1- Drug blocks receptor (Curare and ACH)

2- Drug inhibits exocytosis (Morphine and substance P)

Case 2: Drug and Nt are agonistic (same function)

1- Drug activates receptor (Benzodiazepine and Gaba)

2- Drug inhibits the activity of enzyme

3- Drug blocks pump (Cocaine and Dopamine)

4- Drug increase exocytosis (Amphetamine and Dopamine)