

Drugs effective on the Nervous system

The portion of the nervous system that is outside the brain and spinal cord. Abbreviated PNS.

The nerves in the PNS connect the central nervous system (CNS) to sensory organs, such as the eye and ear, and to other organs of the body, muscles, blood vessels, and glands.

Introduction ;

- Classification of nervous system
- General description (Neuron, Sinaps, Ganglion, Neurotransmitter vb.)
- Receptor Types,

Nervous System

Central Nervous System

Peripheral Nervous System

Vegetative Autonomic Nervous System ANS.

Somatic N.S.

Sympathetic / Adrenergic

—(Adrenaline)

Parasympathetic / Cholinergic

—(Acetylcholine)

Word meaning :

Autonomic nervous system ANS
due to its relationship with (herbal) system
it is called as VEGETATIVE nervous system
and due to its interaction with organs
it is also called VISSERAL nervous system.

Autonomic System : Generally physiological of internal organs functions (involuntary movements) through smooth muscles.

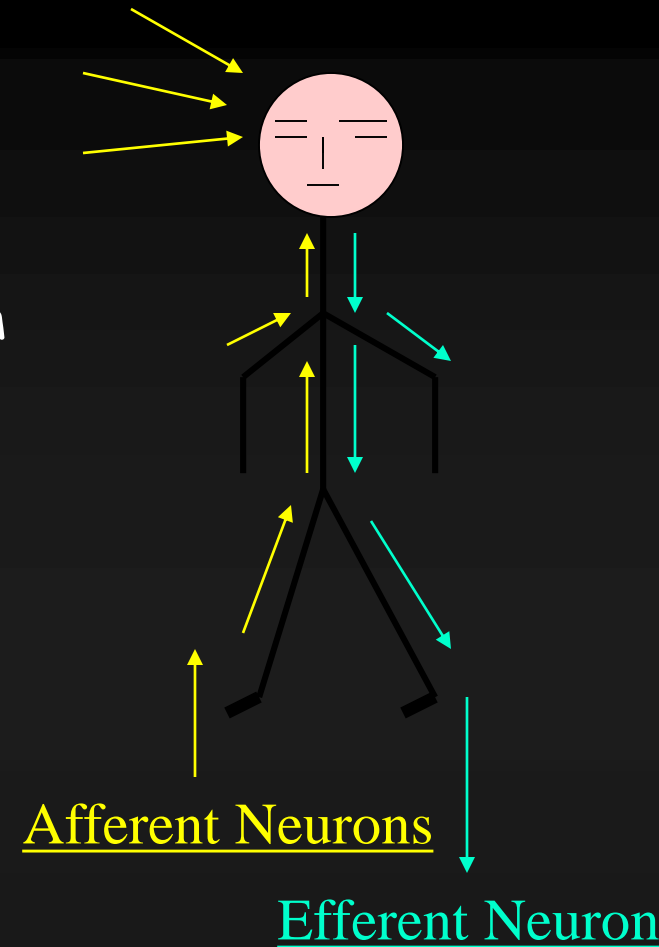
How does system work ?

Advances from the environment and the organism itself are transmitted to the center (brain) through the sensory nerves (afferent neurons)

The center's evaluations and warnings are transmitted via motor nerves (efferent neurons) to certain muscles, glands, organs and so on.

In particular, warnings in which involuntary movements are controlled are transmitted to the smooth (unlined) muscles of these organs via two subsystems called sympathetic and parasympathetic in the autonomic (Vegetative) System.

[Our heart is stimulated by the autonomous system, even though it is not smooth muscular].



The **somatic system** is the part of the peripheral nervous system that is responsible for carrying motor and sensory information both to and from the central nervous system. This system is made up of nerves that connect to the skin, sensory organs, and all **skeletal muscles**. The system is responsible for nearly all **voluntary muscle movements** as well as for processing sensory information that arrives via external stimuli including hearing, touch, and sight.

The body of the neuron is located in the CNS, and the axon then projects and terminates in the skin, sense organs, or muscles without interruption.

Autonomy nerves; consists of two neurons. The first neuron is located within the central nervous system, and after the axon (nerve extension) leaves the central nervous system, it does not continue on its path without interruption, and ends at the node / intersection point, which is defined as the autonomic nerve **ganglion (ganglia) (pre-synaptic tip)**. Because the nerve extension in this ganglion is disrupted in this way and then continues in its path with another extension (**post-synaptic tip**), this intersection point where the two extensions are confronted is called **synapses**.

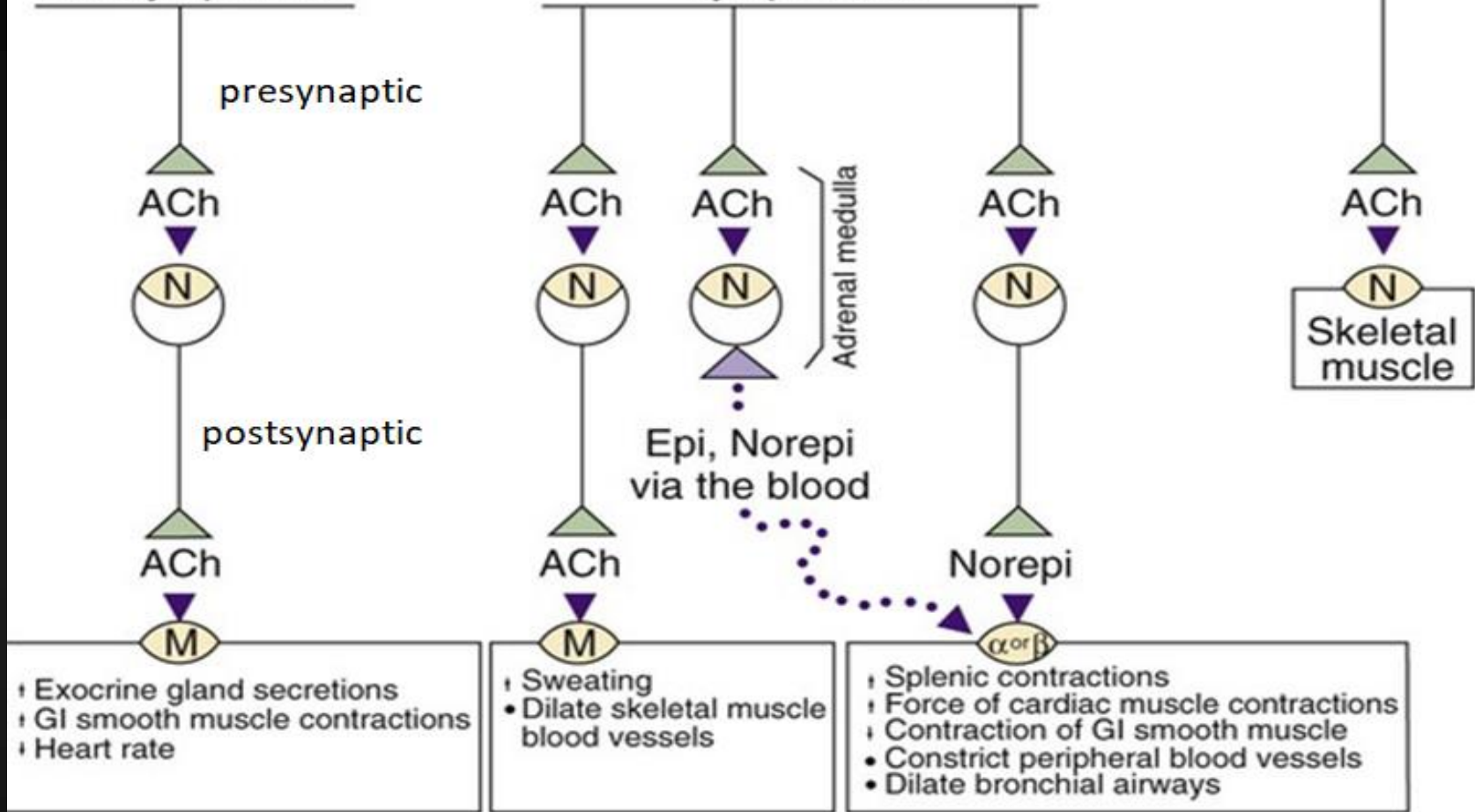
The axon (extension) of the second neuron leaves the ganglion from the ganglion (post-synaptic end) to leave the ganglion and reach the effector organ. Here, the bare ends of the motor nerves are flattened as a plaque (nerve endplate) and form a junction with the cell membrane of the effector organ (smooth muscular), called a **neuromuscular junction**.

Autonomic Nervous System

Somatic Nervous System

Parasympathetic

Sympathetic



Cholinergic

Adrenergic

Neurotransmitters {

ACh = Acetylcholine

Norepi = Norepinephrine

Receptors {

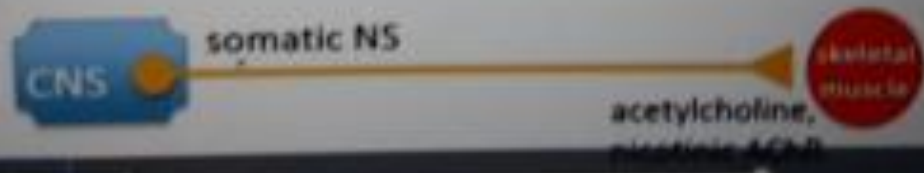
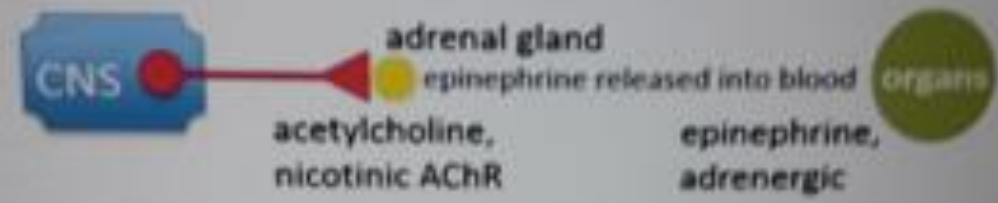
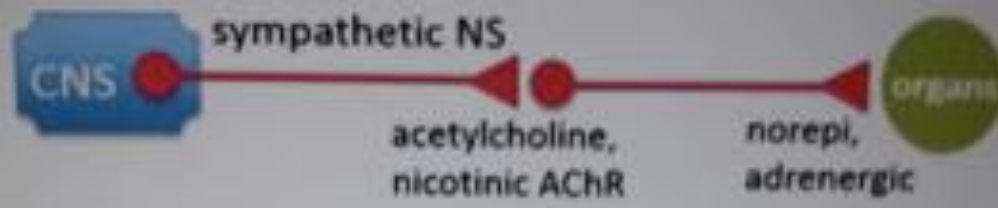
N Nicotinic

α Alpha

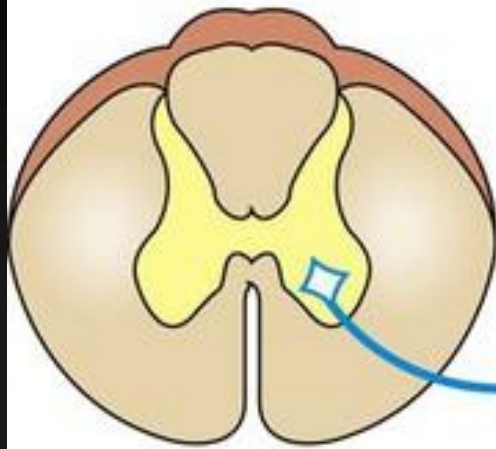
M Muscarinic

β Beta

PNS Output



Central nervous system



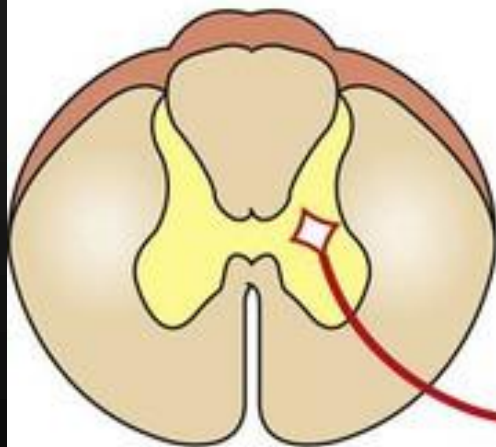
1 motor neuron



Skeletal muscle

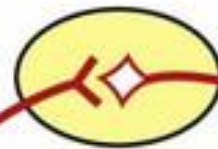
Somatic nervous system

Central nervous system



2-neuron system

Preganglionic



Ganglion

Postganglionic



Smooth muscle



Cardiac muscle



Glands

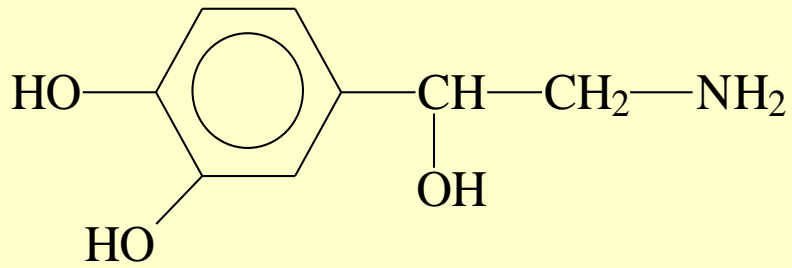
Autonomic nervous system

Synapses and neuromediators;

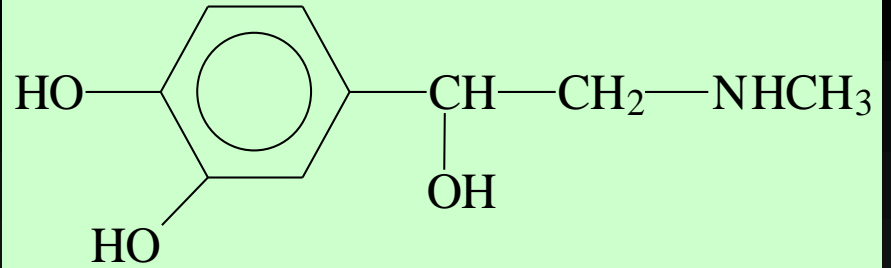
The interrupted message in the synapses is transmitted from the pre-synaptic end to the post-synaptic end by neuromediators (neurotransmitter or neuromodulator), which are stored in the sacs designated as vesicles and released with the incoming stimulus.

**The neuromediators can be used to communicate the message not only in synapses but also in other points where message transmission is required.
(eg, between the post-synaptic tip and the effector organ).**

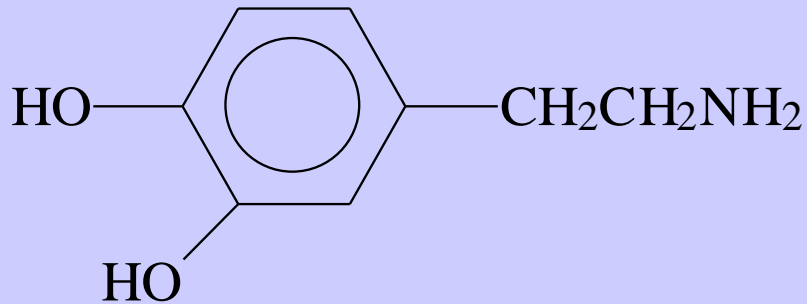
**Neuromediators, described as tissue hormone, are 7.
the neuromediator responsible for the transmission of messages in the cholinergic / parasympathetic system; E.g Acetylcholine.**



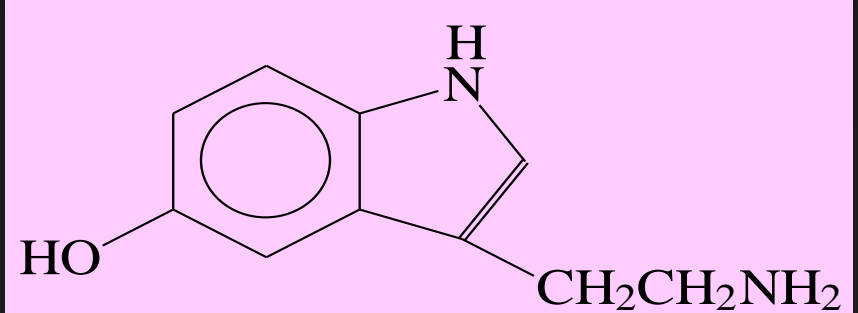
NORADRENALIN



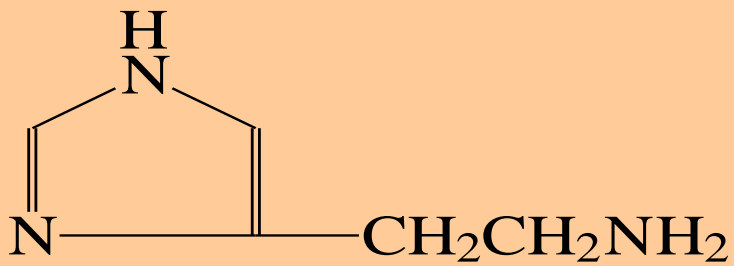
ADRENALIN



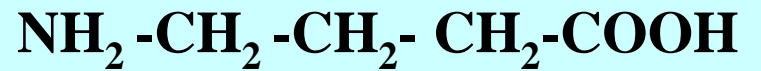
DOPAMIN



SERETONIN



HISTAMINE



G.A.B.A. (GamaAmino Butyric acid)

Receptor Types :

NICOTINIC ve MUSCARINIC receptors for cholinergic system

Adrenergic (alfa & beta) receptors for adrenergic system

In Ganglions ; Nicotinic

In Effector organs ; Muscarinic and noradregenic (alfa and beta receptors)

Termination of neurochemical stimulation

The termination of the effect of the released neuromediators are at below

- 1) Enzymatic degradation; (Post-membrane enzymes in the synapse range)
- 2) Re-uptake : From the synapse range to the presynaptic tip of the neuromediator retrieval with active transport (Na / K ATPase),
- 3) Diffusion ; Transfer to environmental structures by physical diffusion

CLASSIFICATION OF DRUGS

DRUGS EFFECTIVE ON THE AUTONOMIC SYSTEM

Sympathetic Drugs

Parasympathetic drugs ;

— Parasympathomimetic / Cholinergic

— Parasympatholitic/ Anticholinergic

— Ganglion Blockers/ Ganglioplegic

— Neuromuscular blocking agents