

Substances Affecting the Central Nervous System

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Abstract. *Antidepressants, caffeine group, camphor group, strychnine group drugs, respiratory center in veterinary medicine, stimulants, various plant and animal world, the importance of stimulants.*

Key words: *This article discusses substances affecting the central nervous system.*

This group of drugs, in terms of chemical structure, production, pharmacological action and use, has a common pharmacological feature that is characteristic of all of them - they have the property of affecting various centers of the central nervous system. This effect stimulates the activity of the central nervous system, activates and stimulates weakened centers, and restores function. In addition, these stimulants have the ability to quickly restore the activity of the central nervous system, even restore the life of an organism. Therefore, these drugs are called analeptics.

However, these substances only stimulate the nervous system in small and medium doses, and in large doses they have the opposite effect, that is, they depress - inhibit.

In pharmacology, the following groups of these drugs are used:

1. Antidepressants
2. Caffeine group
3. Camphor group
4. Carazole and cardiamin
5. Strychnine group
6. Respiratory center stimulants
7. Various stimulants

These drugs are distinguished by their effect. For example: caffeine activates the centers of the cerebral cortex, the camphor group and carazole - the centers of the medulla oblongata, and the strychnine group activates the centers of the hindbrain to one degree or another.

Stimulating the central nervous system, it increases metabolism in the body, improves blood circulation, breathing and heart function, enhances the function of diuresis and the removal of harmful substances from the body. Therefore, these drugs are widely used in veterinary practice as a therapeutic and prophylactic agent, as a pathogenetic and etiotropic effect.

Russian scientists made a great contribution to the study of the pharmacology of these drugs in veterinary medicine: Zakusov, Raevsky, Vershinin, Evdakimov and others.

Antidepressants are drugs that reduce and prevent depression. Anti - against, depressus - depression. Depression in animals is manifested by decreased activity, loss of appetite, decreased growth and productivity, decreased immune response, slow adaptation to new types of food and storage

conditions, and impaired gastrointestinal function. The effect is to enhance the effect of neurotransmitters such as noradrenaline, dephaline, and protanin in the body, improving the mediation process in the central nervous system and having a stimulating effect. Antidepressants in livestock are used to adapt animals to new living conditions, transfer them to a new type of feed, and replace new employees who care for animals.

They are divided into two groups according to their effect on the nervous system:

1. Those that inhibit the activity of the monoamine oxidase enzyme - nilamide transamine.
2. Substances that enhance the effect of monoamines: imizin, iprozide, amitriptyline.

They are mainly added to animal feed.

Caffeine - coffeinum. Alkaloid, contained in tea tree leaves and coffee tree fruits by 2-3%. It is also obtained artificially. Discovered in 1819 by Runge.

Effects. Caffeine has a complex mechanism of action, its spectrum of action is wide, it has a variety of effects on many organs and systems:

1. It has a strong effect on the centers of the cerebral cortex, activating its psychosensory and psychomotor activity, directly affecting brain cells, enhancing the processes of excitation in the cerebral cortex. In large doses, the cerebral cortex is strongly excited, leading to anxiety and insomnia. This effect can be used in practice when studying at night, driving a car at night, or working at night.
2. Caffeine stimulates the respiratory and vascular centers in the medulla oblongata, increasing their functional activity. In particular, it deepens breathing and improves gas exchange in the lungs. This effect of caffeine is most pronounced in cases of physical fatigue, when breathing slows down. For example, when a person works or plays sports, he gets tired, then tea helps, caffeine has a stimulating effect.
3. The heart, blood - the vascular system undergoes various changes under the influence of caffeine. Caffeine directly affects the heart, increasing the number of heart contractions, improving its rhythm. It has two effects on blood vessels. In particular, it constricts the internal jugular and skin vessels; it dilates the skeletal muscles, heart, kidney, lung and capillary vessels.
4. Caffeine increases the motility of the stomach and intestines, relieving spasms in their muscle layers. Therefore, it is very beneficial for stomach and intestinal diseases.
5. increases urine output. Due to the expansion of the renal blood vessels, the primary urine filtration increases, the excretion of chlorides, nitrogenous products and toxic substances from the body accelerates. For example, it accelerates the elimination of alcohol.
6. caffeine increases the body's immune activity.

Effects.

1. Local effect. When applied to the skin and mucous membranes, it irritates them, causes hyperemia, a feeling of coldness on the skin, accelerates metabolism, enhances the excretion of inflammatory products, and has anti-inflammatory and antimicrobial effects.
2. When applied through the skin, it is quickly absorbed and reflexively affects the central nervous system, especially the centers in the medulla oblongata. In particular, breathing increases, gas exchange in the lungs, heart and blood vessel function improves, blood pressure rises, and the blood vessels of the heart, brain, and kidneys expand. In fevers, it dilates peripheral vessels and lowers temperature due to its antiseptic effect.

Use. As a general monitoring agent

- in case of respiratory depression;
- in case of circulatory disorders;
- in case of general weakness due to prolonged intoxication and infections

- in case of a sharp decrease in blood pressure and heart failure, fever;
- in case of injuries in the form of ointments, inflammations of muscles, joints and tendons

It is forbidden to use it on animals before slaughter: the smell is preserved in the meat. It is not recommended to use it on young animals: high sensitivity.

Dose subcutaneously: cattle 20.0-40.0; horses - 20.0-40.0 pigs - 4-6.0, pigs - 3-4.0; dogs - 1.0- 2.0. Corazol is a white powder, well soluble in water and alcohol, in the form of a 10% solution, it is taken orally in tablets.

Effects. It has no local effect, is quickly destroyed in the body, and has an effect for 3-4 hours. In small doses, it stimulates the central nervous system, especially the medulla oblongata. As a result, breathing quickens, blood pressure rises (if it is low), heart function improves, and the tone of the muscles that are tense increases. In large doses, it is strong; it stimulates the nervous system very strongly, tremors are observed.

Use.

- cardiovascular weakness as a result of diseases;
- acute heart failure;
- shock and decreased blood circulation;
- poisoning with narcotic and sedative drugs

It is administered to animals orally, subcutaneously and intravenously.

Dose subcutaneously: horses - 0.3-0.2; cattle - 0.2-1.5; pigs - 0.005-0.03; dogs - 0.05-0.1.

Cordiamine is a colorless liquid with a characteristic odor, 25% solution. The effect is similar to carazole, but weaker.

Uses.

- acute and chronic circulatory disorders;
- in acute heart failure;
- in poisoning with narcotics and sleeping pills;
- in intestinal intoxications.

Dose subcutaneously: horse, cattle 10-20 ml; pig, sheep 2-4 ml; dog 0.5- 1.5 ml.

Alkaloid; obtained from the kuala tree found in Africa and South America, in the form of A, a white crystalline powder, bitter taste, poorly soluble in water.

Effects. In small doses, it is a powerful stimulant, stimulating the central nervous system, especially the spinal cord centers. It enhances the function of the sensory organs (hearing, vision, smell), improves cardiovascular function, and accelerates metabolism. It lowers blood pressure, increases the tone of skeletal muscles, improves the functioning of the digestive organs, and increases urine output. In large doses, it is considered a strong poison.

Uses.

- in paralysis and paralysis associated with the spinal cord;
- in case of decreased activity of the sensory organs;
- in case of improving the function of the respiratory, cardiac, vascular, and digestive systems;
- as an antidote in case of poisoning with narcotic and sedative drugs.

Subcutaneous dose: horse- 0.02- 0.1; caramol- 0.03- 0.8; chuchka, tune- 0.002- 0.004; it-0.0005-0.001. All central nervous system stimulants activate respiration, but cytisine and lobiline have a strong effect.

1. Cytisine- cytinum. White powder, well soluble in water and alcohol, in practice a 0.15% aqueous solution is used.

Action. When administered intravenously, it accelerates respiration, strongly and effectively raises blood pressure.

Use. For the purpose of restoring blood pressure in asphyxia, respiratory depression, intestinal and collapse.

Intravenous dose: horse 5-10 ml, dog 1-2 ml.

2. Lobeline - white powder, bitter taste. In practice, an aqueous solution of IX is used. Lobeline has a strong effect on the respiratory center, lowers blood pressure. It is administered intravenously in severe infectious diseases, with respiratory depression, asphyxia, and drug poisoning.

Dose: horse, cattle - 0.003-0.1; dog 0.003-0.005.

Various stimulants These substances are obtained from various plants and animals. To obtain the desired result, these substances are used for a long time, but they do not cause dependence in the body.

1. Ginseng - the name of the plant in Chinese means zhen - man, shen - root, that is, a root resembling a person. This is a perennial plant that grows in the Far Eastern regions of China, North Korea, and Russia. Its root is of pharmacological importance. The root contains several active substances: essential oils, pectin, glycosides, panacene, panaccin, genzinin, and the element radium. These substances have the property of stimulating the central nervous system.

When used in the form of an alcoholic tincture, it restores the weakened nervous system and muscles, accelerates metabolism, refreshes the body, and stimulates appetite.

Ginseng is used for general weakness, liver, kidney, cardiovascular disorders.

2. Lemongrass fruits - grow in Korea, Mongolia, the Far East, have pharmacological value.

The fruits contain organic acids, essential oils, iron salts, manganese, silicon, phosphorus and calcium. Stimulates the central nervous system, activates blood circulation, accelerates metabolism, increases the amount of sugar in the blood, refreshes the body. Used as a stimulant for general weakness.

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