



Laser Beam for Physiotherapeutic Uses in Animals

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Physiotherapy (Greek. phisis - nature and therapeia - treatment) is a method of therapy of animals, based on the use of the forces of nature: sun, air, water, light, heat, cold, electric current, ultrasound, X-ray and radioactive radiation, that is, natural or artificial environmental factors that affect the body of healthy and sick animals.

Physical agents act on the body: Physical agents act on the body:

- Reflexively - cutis-sensory reflex - sensory-visceral reflex - visceral-visceral reflex
- Reflex-segmentally
- Topically (Locally).

Generally, Methods of physiotherapy and physio prophylaxis

- Light treatment, or phototherapy (infrared, ultraviolet. visible optical and monochromatic radiation).
- Electrotherapy - electric currents of low and high voltage. electric and magnetic fields.
- Hydro- and thermal therapy - hydro-, mud-, clay-, peat therapy; ozokerite and paraffin therapy, artificial and natural mineral waters and solutions.
- Mechanotherapy - massage, vibration, ultrasound and training (motion).
- Treatment by creating an artificial air environment - aero- and hydro aero ions, aerosols, electro aerosol Light treatment (PHOTOTHERAPY) uses for medical purposes of light energy sources: natural - sun or artificial - lamps that emit part of the solar spectrum.

Laser therapy

- This is a special type of therapy for humans and animals using light helium-neon laser
- The principle of operation of lasers is based on the fact that under the influence of external radiation the atom acquires additional energy, as a result of which part of the electrons move to higher energy orbits (levels) In this state, they are a short period of time (10⁻⁸ s), and then return to their main position, emitting excess energy in the form of light quanta (photons).
- Helium-neon laser radiation is more often used in veterinary medicine.

Irradiation of the skin with helium-neon laser causes

- Increase in the number of neutrophils
- Degranulation of mast cells with the release of granules into the intercellular
- Activation of fibroblast proliferation
- Increasing the physiological activity of connective tissue.

Laser beam

- Stimulates the function of the cardiovascular system
- Promotes vasodilation
- Improves the microcirculation of blood and lymph in areas of inflammation while compressing the vascular walls and reducing their permeability and accumulation of oxygen in the tissues.

- This improves metabolism in the affected area, provides tissue nutrition, which reduces the intensity of the inflammatory reaction and increases the proliferative capacity of tissues.
- By normalizing blood and lymph circulation in the area of inflammation, irradiation helps to reduce exudation and swelling of tissues, normalize microcirculation and metabolic processes.

Under the action of a laser

- Non-specific protective systems of the body are strengthened, especially the amount of lysozyme increases
- Activates the function of phagocytic cells - accelerates the formation of neutrophil-macrophage barrier the main bactericidal system of neutrophils is activated - the enzyme myeloperoxidase
- Increases the output of bactericidal substances from cells (lysozyme, interferon, etc.)
- All of the above accelerates the autolysis of necrotized tissues, cleaning the area of inflammation and proliferative processes in the damaged area
- The phagocytic reaction in the form of the formation of first neutrophil and then monocyte barrier is stimulated by a laser beam in the exudation phase, and the activation of connective tissue elements accelerates the formation of fibroblastic barrier, which promotes rapid isolation of pathogens
- Laser therapy stimulates hematopoiesis, the activity of T- and B-lymphocytes, which in turn stimulates antibody production and cell-specific immunological protection.

Low-intensity helium-neon laser radiation is used in the treatment of

- Wounds and ulcers of the skin and mucous membranes
- Arthritis
- Abscesses
- Phlegmon
- Hoof rot in sheep
- Bone fractures
- Osteomyelitis
- Conjunctivitis

- Keratitis
- Laser treatment can be performed by exposure to the body through biologically active points) or reflexogenic zones (laser acupuncture).

It is recommended to apply laser therapy for treatment of

- Rhinitis
- Stomatitis
- Laryngitis
- Pharyngitis
- Gastroenteritis
- Ulcerative gastritis
- Bronchopneumonia of calves
- Peritonitis
- Arthritis
- Catarrhal-purulent conjunctivitis
- Cataracts
- Inflammation of the outer and middle ear.