



# **VIRAL HEMORRHAGIC FEVER OF RABBITS ("HEMORRHAGIC PNEUMONIA", "NECROTIC HEPATITIS") (LITERATURE REVIEW)**

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<b>Received:</b> 4 <sup>th</sup> October 2021 <b>Accepted:</b> 4 <sup>th</sup> November 2021 <b>Published:</b> 10 <sup>th</sup> December 2021	This article reviews the literature on the causes of viral hemorrhagic fever, which is a dangerous infectious disease of rabbits and causes great economic damage to rabbit farms, and measures to prevent the disease.
<b>Keywords:</b> Caliciviridae, diarrhea, necrotic hepatitis, tachycardia, dystrophy, Rabbivak-V	

## **INTRODUCTION.**

Rabbit breeding is one of the most lucrative sectors of animal husbandry, and many farmers and family entrepreneurs, who have begun to operate in the context of economic reforms in recent years, also prefer this sector. The created conditions and opportunities impose great responsibilities on the livestock industry, as well as rabbit specialists and researchers. Because rabbit breeding is one of the main branches of animal husbandry in the country today, its development will increase the ability to provide the population with dietary products such as rabbit meat and raw materials from rabbit skin. Therefore, it is the urgent task of the veterinary service to achieve high productivity by constantly improving the study, prevention and treatment of this disease, adapting antibiotics to the level of susceptibility to pathogens, maintaining the number of rabbits through its prevention. is calculated.

## **THE DRIVER AND ITS DURABILITY.**

The prevalence of viral hemorrhagic fever in rabbits is currently high in Australia and is caused by a specially amplified virus of the Caliciviridae family, a genus of calciviruses that stores RNA for the mass extermination of wild rabbits and rodents. Viruses are spherical or icosahedral, 20-30 nm in size. The RNA is encapsulated by a capsid, which consists of 32 cup-like capsomers arranged in a cubic symmetry. That is why the name is Latin calic - cup. The capsid consists of 180 protein molecules, has no shell and does not contain lipids and carbohydrates. The virulence of the virus for rabbits is very high. The virus is resistant to chlorine and ether. Inactivated in 1 hour at a temperature of 50 C. The liver is actively stored in pathological material at 4 C for 1 year. Inactivated by 0.1% formalin for 24 hours. The virus retains its virulence for 5 years at -40 C. The carrier of the virus, which is the causative agent of viral hemorrhagic fever in rabbits, is sick and infected rabbits, feed, litter, soil, water, infected litter, rabbit tivity (fur) and skin, fur from the place of infection, may be raw materials. It was found that the viruses persist in the skin for up to 3 months. The virus has not yet been studied in depth.

## **THE COURSE OF THE DISEASE.**

Examination revealed that rabbits infected with necrotic hepatitis (NCG) died within 1-2 days, and rabbits with them died within 3-4 days. Sometimes death can occur in less than a day. This, of course, depends on the rabbit's immune system. The incubation period in rabbits is 48-72 hours, sometimes up to 120 hours. That is why the death rate is very high. Clinical disease is almost non-existent. There is no cure for the disease. In fact, the treatment of viral diseases has not been developed for humans either. Once the virus enters the body, only the immune system helps to overcome it. To do this, it is necessary to strengthen the immune system with immunostimulatory drugs. In this case, the life of the rabbit can be slightly extended.

**Signs.** Unfortunately, the symptoms of the disease appear a few hours before death. Rabbits that appear to be healthy are often killed on the farm or in groups. 25-30 hours before death, the body temperature rises to 40.8C. For

information, the normal temperature of the rabbit is 38.5-39.5 C, the pulse rate is 120-200 beats per minute. In infected rabbits: difficulty breathing, loss of appetite, lethargy, lethargy (prolonged sleep), slight bruising of the lips and mucous membranes, spasms (muscle spasms), tachycardia (rapid heartbeat), runny nose, squash, pregnant rabbits throw up, diarrhea (diarrhea) and yellowish or bloody discharge from the nose, mouth and back hole (anus) of the rabbit, which is close to death. Rabbits, which usually look healthy, shake their legs several times and scream sadly. The disease is most common in rabbits over 2-3 months of age, regardless of sex or breed. Young rabbits up to 2 months of age are immune to the disease and usually survive. Not all infected rabbits have the same symptoms. In some rabbits, only 18 hours after infection, there is a decrease in mobility, sadness, weakness, and a slight manifestation of the disease, and sadly dies.

**Diagnostics.** Diagnosis of hemorrhagic pneumonia (HPGI) is made in dead rabbits. For confirmation it is necessary to carry out histological laboratory tests, biological examination of the initial material, knowledge of epizootiological data, detection of the virus. The carcass of an animal weighing at least 3 kg is placed in an ice-covered, disinfected and tightly closed container. Rabbits sent for analysis of hemorrhagic fever should be sent no later than 3 hours after death. The body is dissected in the laboratory. When the body of a rabbit infected with QVGI is opened, you can see that almost all organs are damaged. Examination reveals small traces of mucus in the trachea, bronchi and lungs, hemorrhagic rashes on all internal organs of the animal, and some bleeding in the intestines of some carcasses, the stomach is full of food. This indicates that the digestive system is severely damaged. The highest concentrations of the virus are in the liver and lungs. That is why the disease is also called "necrotic hepatitis" and "hemorrhagic pneumonia". The size of the affected liver increases, turns yellow, becomes soft, loses strength, and in some cases easily breaks down when touched. The virus rapidly changes to non-viable. The heart is usually enlarged, the walls of the ventricles are elongated, there are several spots on the endocardium and epicardium, bleeding under the spots, and in the myocardium there is granular dystrophy. Adult rabbits and pregnant rabbits are more susceptible to the disease. They have a very high mortality rate. In particular, 60% of rabbits aged 5-6 months and 99% of adult rabbits die within 16-24 hours. The infection rate of rabbits on the farm is 60-80%, and, unfortunately, the mortality of infected rabbits is 80-100%. The disease does not affect small rabbits that are breastfed. There is another form of the disease, which is extremely rare. In this case, the rabbit gets sick and then recovers. Such rabbits develop immunity to the disease. But, unfortunately, they remain carriers of the virus. They add the virus to the garbage. It infects healthy rabbits. The disease does not affect humans and other animals.

**Countermeasures.** In order to protect against the disease, it is necessary to carry out preventive work in a timely and quality manner. The following measures must be taken to prevent the onset and spread of hemorrhagic disease on the rabbit farm:

- protection of economic territory;
- equipping the entrance with disinfection barriers;
- installation of disinfectant carpets (3% alkaline solution);
- Regular disinfection of cages (with 3-5% formalin);
- including dissection and deratization;
- provide employees with special footwear, clothing, personal hygiene items;
- frequent animal inspections;
- and most importantly, timely vaccination.

Rabbivak-V, Rabbivak-B, and Associated Vaccine are available.

**Preventive measures.** Vaccination of rabbits at 45 days of age is repeated every 6 months. 5-9 days after vaccination, an immune response to viral hemorrhagic diseases occurs. The vaccine does not have healing properties. The vaccine is administered to the back of the thigh or subcutaneously in 1 dose (1 ml), 0.5 ml once for young rabbits. Disruption of the vaccination schedule should be avoided, as rabbit hemorrhagic fever leads to a decrease in the effectiveness of immunoprophylaxis. If the next phase of the vaccine is missed, the vaccine should be given as soon as possible. No pathological symptoms were detected at higher doses of the drug. In rare cases, the vaccine can cause an allergic reaction. In this case, the drug is discontinued and antihistamines are used. The use of Rabbivak-V in combination with other immunobiological drugs, as well as vaccination of animals with other vaccines for 14 days before and after the next vaccination is prohibited. Clinically sick and debilitated rabbits are not vaccinated. There are no restrictions on the slaughter and sale of vaccinated rabbits, regardless of the time of vaccination.

**Epizootics.** In case of epizootics, the following work should be done:

- ♣ adherence to strict quarantine rules;
- ♣ Stop the sale of animals, meat and skins;
- ♣ Restriction of movement of farm workers;
- ♣ Stop regrouping rabbits;
- ♣ not accepting new loads of animals;
- ♣ identification of sources of infection;

- ♣ work in collaboration with veterinary staff;
- ♣ Sick and suspected rabbits are killed and burned without blood;
- ♣ Treatment of cages and equipment with disinfectant solution
- ♣ Manure, pots, sheets and feed residues should be burned or buried to a depth of 2-3 m.

### **LIST OF USED LITERATURE.**

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