

## ETIOPATHOGENESIS AND PREVENTIVE MEASURES OF NODULOUS DERMATITIS IN CATTLE.

Normamatov R. <sup>1</sup>

<sup>1</sup> Assistant

Mamatsalayeva Z. <sup>1</sup>

<sup>1</sup> Student: Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology, Tashkent Branch

### ARTICLE INFO

### ABSTRACT:

#### ARTICLE HISTORY:

Received: 14.06.2025

Revised: 15.06.2025

Accepted: 16.06.2025

*This article provides information on the causes, clinical signs, pathoanatomical changes, and measures to prevent and combat lumpy dermatitis in cattle.*

#### KEYWORDS:

*Lumpy skin disease,  
cattle, smallpox, virus,  
DNA, RNA*

**INTRODUCTION. Relevance of the topic:** Lumpy skin disease is a pox virus of cattle carried by insects. This disease does not pose a threat to human health, but can cause significant economic damage to livestock farming due to a decrease in milk production and body weight of animals. Previously, the disease was found only in Africa, but over the past 10 years it has spread throughout the Middle East, and also affected Turkey, the Volga, the Caucasus, the Russian Federation and Kazakhstan. All this significantly increases the risk of the disease in neighboring countries, including the Central Asian region. For example, Kyrgyzstan and Uzbekistan, which border Kazakhstan, where cases of the disease have been recorded, have already begun to take preventive measures. Nodular dermatitis of cattle (hereinafter referred to as ND) (Dermatitis nodularis bovum) is a contagious, non-limiting viral disease characterized by persistent fever, necrotizing focal skin lesions (nodular edema), widespread lymphadenitis, lesions of the mucous membranes of the eyes, respiratory and digestive organs. Sheep and goats can sometimes also be affected by this disease. In adult cattle and horses, the disease is asymptomatic, but there are signs of decreased appetite, increased thirst, pain in muscles and joints, lameness, hair loss, dermatitis, increased and rapid bleeding gums, and loose teeth. In a sick animal, general weakness, apathy, growth and development retardation are observed. Various hemorrhages

(hemorrhages) are observed in the skin, mucous membranes and subcutaneous tissue, and in these places the hair falls out and ulcerative dermatitis develops. In a sick animal, there is a decrease in productivity, growth retardation, hair loss (especially around the eyes and in the lumbar region), dermatitis, delayed wound healing or the appearance of non-healing wounds. The disease is distinguished from deficiencies of thiamine, riboflavin, phylloquinone, ascorbic and nicotinic acids and cyanocobalamin, as well as hypocalcemia, hypomagnesemia and dermatitis. Organizing farms as a closed enterprise, organizing entrances to buildings through dezokimats, feeding animals with nutritious feed, housing them in accordance with zoohygienic standards, timely isolation, separate storage and treatment of sick animals, keeping the farm area clean, and carrying out disinfection and disinfestation measures on the farm according to a plan help prevent this disease.



Pathogen. A DNA-containing virus belonging to the genus Capripoxvirus of the Poxviridae family, antigenically close to the sheep and goat pox virus. The source of infection is sick and latent animals. The virus is excreted during the incubation period and during the illness of the animal through broken skin areas, saliva, semen, milk, eye and nasal secretions. There is information that the virus is transmitted from one animal to another mainly through insects, the transmission route of which is suspected of mechanical transmission. Because the disease is especially common in hot and humid seasons, in humid, muddy areas. However, the range of virus carriers has not yet been determined. Several studies aimed at isolating the virus from blood-sucking insects (flies, midges, ticks) have been unsuccessful. Some scientists believe that the virus is spread mechanically through poultry. The disease appears suddenly, simultaneously in remote locations and spreads very quickly. The transmission factors are milk, semen, feed, water, transport and other environmental objects. The virus can be transmitted by direct contact between sick and healthy animals, sexually, and in calves through milk.

Clinical signs. In the acute course of the disease, body temperature rises to +40 C and remains at this level for 4-14 days, loss of appetite, discharge from the eyes, mucous or purulent discharge from the nose and mouth, and after 48 hours, the formation of bumps on the skin with a focus is observed. These bumps are slightly raised above the skin surface, round, clearly demarcated, 0.2 -7.0 cm in size, and their number can range from a few to several hundred, depending on the course of the disease. They are located throughout the body , mainly in the thighs, armpits, around the eyes, muzzle, and groin. In severe cases, the bumps can also be located on the mucous membranes of the mouth and nose, and in the labia. As a result of the formation of nodular bumps on the eyelid, the cornea becomes cloudy, the animal becomes completely or partially blind. 1-3 weeks after the formation of the bumps , the tissue inside them undergoes complete necrosis, sequesters are formed. Later, the bumps burst, releasing a viscous mucous substance with an unpleasant odor. It is characterized by fever, diarrhea mixed with mucus and blood. In the subacute course, there is no significant damage to the skin . The disease is accompanied by short-term fever (2-5 days ), loss of appetite. The disease can also occur without clinical symptoms, in which case the disease is diagnosed only by detecting the DNA of the causative virus in the polymerase chain reaction (PCR) or by the presence of virus-neutralizing antibodies. Infected animals without clinical symptoms in the affected herd can reach up to 50%.

Treatment. No specific treatment methods have been developed. Symptomatic treatment is used. Good conditions for feeding and keeping sick animals are created. Their skin is treated with medicinal and disinfectant agents. Antibiotics and sulfonamides are used to prevent secondary infection and complications of the disease. In natural conditions, 90% of animals can recover .

Specific prophylaxis. For active specific prophylaxis, a homologous live attenuated virus vaccine from the Neethling strain and a heterologous live attenuated virus vaccine from capripoxvirus strains isolated from sheep and goats are used. All strains of capripoxviruses used as vaccines can cause a strong local reaction at the injection site. The vaccination dose with the lumpy dermatitis virus vaccine is 2.5 lg50 /cm<sup>3</sup>, and the vaccination dose with the sheep and goat pox virus vaccine is 5 lg50/cm<sup>3</sup>. For specific prophylaxis, the initial scheduled vaccination is carried out in young animals at the age of 3 months. Revaccination is carried out after 12 months. In unhealthy areas and farms in risk areas, all healthy animals are vaccinated regardless of the period of previous immunization . Young animals up to 6 months of age are vaccinated 2 times with an interval of 14 days.

Prevention and control measures. The main focus should be on preventing the introduction of the pathogen from foreign countries. Cattle, their meat, dairy products and semen imported into the country should be purchased from countries that are healthy for lumpy dermatitis. Cattle should be tested for lumpy dermatitis during a 30-day preventive quarantine and only healthy animals should be allowed onto the farm. It is not advisable to keep cattle and sheep and goats in border areas with foreign countries .



### **Measures to prevent lumpy dermatitis in cattle**

**Vaccination is the most reliable preventive measure:**

Cattle are vaccinated with a **live attenuated vaccine against lumpy dermatitis**.

**Neethling** strain or cross-vaccines based on **sheeppox/goatpox** virus are used (if they provide the necessary protection).

Vaccination is carried out **at least once a year in** the spring months.

**Emergency vaccination measures are being carried out** in areas where the disease is prevalent (ring vaccination).

**Insects (mosquitoes, flies, midges) play an important role in the transmission of the disease:**

**Eliminate stagnant water areas** around the farm (breeding grounds for insects).  
of cattle **with insecticides** (spraying, bathing).

Treatment of livestock houses and barns with **repellents**.

Installing **mosquito nets** on windows.

cattle indoors in the evening and early morning (when insect activity is highest).

Establish **disinfection points for vehicles** and people entering the farm area.

any new animal **for 14 days before adding it to the main herd**.

Limit direct contact of outsiders (guests, workers) with animals.

Do not export cattle hides or meat to other farms (if the disease is detected).

The health of the cattle is checked daily : signs such as fever, skin swelling, weakness, and loss of appetite are monitored.

**If signs of illness are found, the animal:**

**Immediately isolated**.

The veterinary service will be notified.

The remaining herd will be put under observation.

**Separate equipment** (bucket, feed container) is allocated for sick animals.

of animals, skins, or products from areas where the disease has been detected to other locations **is strictly prohibited**.

by unlicensed transport will **be closed**.

Farmers should not sell or buy cattle that have not passed state veterinary inspection.

**By the State Veterinary Service:**

Digitization and registration work is underway.

Preventive examinations are carried out.

Organizes sanitary measures in cases where the disease is observed.

Individual farms are recommended to show their animals to a veterinarian **every quarter**.

• Disease **awareness campaigns** are organized for farmers and workers.

Nodular dermatitis symptoms, transmission routes, and prevention measures **educational seminars** are held.

**Conclusion:** Lumpy Skin Disease (LSD) is a highly contagious, non-zoonotic disease of cattle caused by a virus of the *Capripoxvirus* genus. Clinical signs of the disease include high body temperature (40–41°C), the formation of nodules on the skin measuring 2–5 cm in size, enlarged lymph nodes, swelling of the legs and trunk, anorexia, weakness, depression, and in severe cases, skin necrosis, pneumonia, and abortion. These signs are important diagnostic indicators for early detection and treatment of the disease.

### References:

1. Bakhtiyorovich E. S., SaifiddinJakhongirUgli K. DIAGNOSIS OF PROTEIN METABOLISM DISORDERS IN FISH //American Journal of Agriculture and Horticulture Innovations. – 2023. – Т. 3. – №. 05. – С. 04-12.
2. Qosimov, S. J., and U. K. Sh. "Hypovitaminosis A And D In Young Animals." *American Journal of Advanced Scientific Research* 2.10 (2025): 79-84.
3. Kasimov S. et al. The Pathomorphology Of Disorders Of Vitamins And Protein Metabolism In Fish //The American Journal of Veterinary Sciences and Wildlife Discovery. – 2021. – Т. 3. – №. 06. – С. 9-12.
4. Qasimov, S. J. "SPREAD OF DISEASES OF METABOLISM DISORDERS IN FISH." *AGROBIOTEXNOLOGIYA VA VETERINARIYA TIBBIYOTI ILMIY JURNALI* (2022): 439-444.
5. Касимов С. Ж., Мамацалаева З. ИНФЕКЦИОННЫЙ БРОНХИТ ПТИЦ //Global Science Review. – 2025. – Т. 2. – №. 1. – С. 80-83.
6. Eshmatov G. THE EFFECT OF FERULA ASSAFOETIDA GRAIN ON THE ORGANISM OF KARAKOL SHEEP //Ethiopian International Journal of Multidisciplinary Research. – 2023. – Т. 10. – №. 12. – С. 248-251.
7. Eshmatov G. E. Harmony of education and student development in the process of physical education. – 2022.
8. Ниязов Х. Б. ДЕЙСТВИЕ СЕМЯН ФЕРУЛЫ НА МОРФОЛОГИЧЕСКИЕ ПОКАЗАТЕЛИ КРОВИ И ПЛОДОВИТОСТЬ КРОЛИКОВ //Zbiór artykułów naukowych recenzowanych. – С. 80.
9. Эшматов Г. Х., Маматсалаева З. О. ЗНАЧЕНИЕ СОВРЕМЕННОЙ ВЕТЕРИНАРНОЙ МЕДИЦИНЫ В ЛЕЧЕНИИ ЛАМИНИТА У ЛОШАДЕЙ //Global Science Review. – 2025. – Т. 2. – №. 1. – С. 84-86.
10. Eshmatov G. X., Mamatsalayeva Z. O. POULTRY HYPOVITAMINOSIS //Global Science Review. – 2025. – Т. 2. – №. 1. – С. 76-79.