
**CLINICAL SYMPTOMS OF AMERICAN ROT DISEASE IN BEE AND
CONTROL MEASURES
(Literature Analysis)**

Daminov Jorabek

Assistant of Samarkand State University of Veterinary Medicine,
Animal Husbandry and Biotechnology, Tashkent branch

Turaboeva Diyora

Student of Samarkand State Veterinary Medicine,
Animal Husbandry and Biotechnology University, Tashkent branch

Burkhanova Sitara

Student of Samarkand State Veterinary Medicine,
Animal Husbandry and Biotechnology University, Tashkent branch

Abstract

This article provides information about the American foulbrood, which is widely observed in beekeeping, the drugs used in the treatment of the disease, the symptoms of the disease, and measures to combat it.

Keywords: Bees, disinfection, Histolysis infectiosa, incubation period, larvae, Paenibacillus larvae

Relevance of the Topic

Currently, our honorable president Sh. Mirziyoyev is paying special attention to the agricultural sector. In order to fundamentally improve the management system of the beekeeping network, organize breeding work in the network on a scientific basis, increase the efficiency of beekeeping operations, and further increase the production volume and types of honey products, according to the decision of our President No. PQ-3327 of 2017, O' The Ministry of Agriculture of the Republic of Uzbekistan, the Ministry of Economy, the State Committee for Forestry, the State Committee for Ecology and Environmental Protection and the joint-stock-commercial "Aloqabank" (hereinafter referred to as JSC "Aloqabank") the decision to establish the "Uzbekistan beekeepers" association (hereinafter referred to as the Association) was put into practice [1].

The American rot disease is extremely damaging. The sick family produces 5-40 kg of honey and 0.5 kg of wax annually, pollination of flowers is reduced by 30-80%. In addition, it can be said that when a colony of bees is sick, the collection of honey decreases by 20-80% and it dies completely in 2-3 years. The World Organization for Animal Health has included the American rot in the quarantine diseases of bees and mandatory list of B diseases. The disease usually occurs in the summer when the

mother bee lays many eggs. A family of bees heavily affected by this disease dies in the middle of summer.

The causative agent of American foulbrood is *Latin-Histolyasis infectiosa pernicioso larva apium*, *Pestis apium Atamericana*, English- *Atamerican foulbrood*, Russian-American gnilets. This disease is caused by *Larvae bacillus*. The causative agent of the disease is a gram-positive rod with bent ends, stained with ordinary dyes, and the rod with a size of $1.5-6 \times 0.5-0.8 \mu\text{m}$ is a mobile, spirochete-like microbe. . The pathogen produces very resistant spores. *Bacillus larvae* grow well in special nutrient media at 35-38 C, pH=6.2-7.2. Feed prepared by adding 10% horse blood serum to neutral meat peptone agar. The medium is very suitable for the growth of the pathogen. In solid nutrient media, the pathogen forms isolated colonies. After 24 hours in Tomasetta nutrient medium, the surface is thin and slightly raised R-shaped, first clear and then blue. form colored colonies.

Resistance of the causative agent. The causative agent is stored for a long time in honey and dead larvae. Other microorganisms, i.e. gram-negative and gram-positive, are not present in the larvae that died from this disease, the reason is that the causative agent during growth, it secretes an antibiotic substance. The causative spore is very resistant and is stored in bee food, soil, and dead larvae.

Spores remain virulent for 228 days in dry soil, 1 year in honey, 10 years in dead bees and black wax, 1 year in honey, and 20 years in the hive.

The vegetative form of the pathogen is inactivated in 15 minutes at 60 C

The spore form of the pathogen is inactivated in water at 100 C in 30 minutes, in honey at 100 C-160 C in 40 minutes..



Clinical signs of the disease. The disease appears in two seasons. The 1st season begins at the end of June and the beginning of July, if not treated, the 2nd season appears at the end of August. The incubation period of the disease lasts 9-10 days or 2-3 days. The disease manifests itself in two ways:

without clinical signs (hidden-latent)

bright

The first latent period is observed, and then there is a clearly visible form. In the latent period, the pathogen is detected in all bees and honey. The mother bee determines that the larvae are infected and separates them from healthy larvae. During this period, 50-90% of the infected 0.5 - 1.5-day-old larvae are separated and lost. At this time, the sign of the disease can be seen in the uneven and oscillating position in the mummified larvae. When the disease manifests itself, striped larvae begin to appear in the family. in some



cases, male bees and queen bees are infected. Larvae in open hives die faster. Larvae's skin becomes thin, easily torn, as a result of the disease, the larva turns black. Dead larvae are brown and sticky, and when pulled 10-15 cm is pulled like a silky thread (Fig. 1) and smells like wood glue. After a month, these masses harden at the base of the hives and the bees cannot clean it.

Pathologoanatomical changes. In the course of the American rot, the larvae change in 4 stages. In the 1st stage, the larvae change their shape, muddy yellow spots appear on their bodies. In the 2nd stage, the larvae lose their shape, the dead larvae are crooked, sticky-smelling and liver. It becomes colored. In the 3rd stage, the larvae turn into a coffee-colored rotten mass. In the 4th stage, the color of the larvae becomes black and they are firmly attached to the cells. (Fig. 2)



Treatment.

The disease can be treated using sugar paste. 154 g of sugar is added to the flour, 1 hteramycin and 45 g of sunflower oil and a paste is prepared. The sugar paste is placed on a thin cloth on a frame like a 200 g cake.

100 g of sugar is mixed with 2.5 g of terramycin and sprinkled on the bee house.

2 kg of sugar, 1 l of water, i.e. one of antibiotics such as penicillin, norsulfasol, streptomycin is added to the stew. 1 g of antibiotic is added to 1 l of stew.

The healing food is prepared by taking 1 part of sugar and 1 part of hot water, and one of these drugs is added to 1 l of juice: erythromycin 400000TB (100 ml per lane 3 times a day with an interval of 5 days), tetracycline 400000TB, sulmicide sodium-2g, Penicillin 100000 TB (250 ml per corridor 4 times a day for 4-5 days), Larvizol 100-150 ml per frame every 4-6 days until complete recovery, 3 times for prevention.

Nitrofurane preparations (furazolidone, nitrofurazone) are given at the rate of 3 g per 1 liter of syrup at the rate of 100-150 ml per ditch of the frame, or 3 g of nitrofurane preparations can be crushed, mixed with 100 g of powdered sugar and sprinkled at the rate of 10 g per 1 frame.

Measures to combat the disease. Quarantine is announced within a 7 km area based on the certificate of the district veterinary inspector and the mayor's decision in the bee farm where the American rot disease has been detected. sent to the laboratory for examination. If the disease has just infected a family of bees, then that family is

killed by fumigating with sulfur, ether or formalin vapors and then burned. (Fig. 3). If the disease has spread to several families, then in the evening bee families are transferred to clean, disinfected hives. Honey from diseased hives is taken and stored in a closed container. The ground under the boxes is disinfected by mixing 3 parts of soil with 1 part of chlorinated lime. will be done. Before disinfection, the apiary is thoroughly cleaned of wax and propolis, washed in 3% washing soda, dried and treated with a 20% caustic soda-potash mixture for 2 hours. The mixture is used at the rate of 0.5 liters per 1 square meter. The disinfected hive is washed with clean water after 24 hours and dried. 3 times with 10% hydrogen peroxide with 3% vinegar or formic acid, 2 times with 5% formaldehyde or caustic sodium solution is effective. Frames are soaked in 2-4% caustic sodium solution for 15 minutes. The nets of the robe, towel, face mask are boiled for 3 hours in 2% hydrogen peroxide, 4% formaldehyde for 4 hours. disinfected during exposure.

Disease prevention measures. For the purpose of prevention, it is necessary to constantly carry out the following activities:

it is necessary to leave a sufficient amount of food for families to winter, during one season it is necessary to carry out 30% renewal of frames.

empty beehives, equipment should be mechanically cleaned and disinfected.

during the spring inspection, 1-2 frames with at least 10 kg of honey and feathers are left in one cell. During the spring inspection of the farm, there should be 15% spare hives, moreover, the hive should not be used for more than 2 years.

it is necessary not to leave the bees in extreme heat during their life and to inspect the hives regularly.

Summary. In conclusion, it can be said that the spreaders of American rot disease are infected and dead larvae. Young worker bees cleaning the wax cells are the main spreaders, and they infect other bees with the virus. The mother bee is separated from the infected bee colony and a new healthy one is transferred to the treated colony. If this disease is not detected in time, it will cause great economic damage, so more attention should be paid to the prevention of the disease.

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