Pathomorphology and Treatment Measures of Co-occurrence of Rabbit Salmonellosis and Colibacillosis

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Abstract
The article describes the co-spread of rabbits’ salmonellosis and colibacillosis in rabbit farms, which is one of the animal breeding branches, their clinical signs, pathogenesis, potency, treatment and prevention.

Key words: necrotic fibrin planes, hemorrhagic bleeding, leukopenia, MPB, MPA, elective nutrient media of Endo, Levin, Bismuth sulfite, Salmonella-Shigella, antibiotic sensitivity.

Introduction
In order to ensure the implementation of the Presidential Resolution of the Republic of Uzbekistan Sh.M.Mirziyoev on March 28, 2019 PR-4254 "On measures to organize the activities of the State committee for veterinary and livestock development of the Republic of Uzbekistan" a number of projects are being implemented in the regions.

In particular, during his visits to Tashkent region, Tashkent district, Toshlok district of Fergana region, Andijan region special attention was paid to the possibility of providing employment to the population through the further development of rabbit breeding, creating opportunities for additional income through cooperation, as well as all other sectors in the region. In this regard, in Andijan, Fergana and Namangan regions, such issues as rabbits breeding from 1 million to 3 million for each valley population are being implemented.

Along with meat, eggs and fish products, rabbit meat production also plays an important role in solving socio-economic problems.

Medical and veterinary staff recommend eating rabbit meat for allergies, hypertension, gastrointestinal, diabetic, gallbladder, liver diseases that occur in humans. Taking into account the biological value of rabbit meat, its softness and low fat and cholesterol content, dietary rabbit meat can be consumed and used in a wider range.

Co-occurrence of salmonellosis and colibacillosis in rabbits today and its pathomorphology study, modern treatment methods is one of the urgent tasks.

Concomitant course of salmonellosis and colibacillosis has a drastic economic impact on the reproduction and development of rabbits, causing up to 65% of deaths, the disease is accompanied by gastrointestinal tract (hemorrhage) inflammation which is common in rabbit cubs, mainly from 20 days to 2,5 months of old. Yellowish-blue diarrhea in rabbits, swelling of the abdomen due to gas filling of the intestines, fatigue, refusal to eat, drowsiness, and a rise in body temperature to 40-41°C, death between 3-5 days if the disease is not prevented ends with.

Level of topic study: Pathogens types that cause salmonellosis separately and colibacillosis separately in rabbits have been identified by the following scientists.

S. V. Leontyuk and etc. were the first to identify the causative agent of S. cholerae suis of salmonellosis in rabbits (I.Z. Bubis 1936).

Later (B.A.Gusev and A.T.Babicheva 1961) it was written that in rabbits it causes S.tuphimurium type. The most common type is Salmonella enteritidis. All these pathogens belong to the Enterobacteriaceae family of the Salmonella genus.
The causative agent of colibacillosis belongs to the *Escherichia coli* Enterobacteriaceae family, *Enbacterialis* genus, *Schzomycetes* class. Veteshi (1970) isolated a pure culture of *E.coli*, N.P.Alanov (1969) isolated *E.coli* with a very high toxin along with diarrhea, it poisons the blood by producing endotoxin and observed leukopenia (decrease in leukocytes) by affecting leukocytes.

Both pathogens grow well in normal nutrient media MPA, MPB, pH 7.4-7.5 agar-agar at 37-38°C thermostat.

*Escherichia coli* (MPA, MPB, MPS, from elective nutrient media, in endo agar) grows well. *Escherichia coli* thick, short length 1-3 μm wide 0.5-0.7 μm twisted ends, gram-negative (pinkish-red) rod-shaped bacteria that do not form spores, located one by one. Only strains 08, 09, 0101 form capsules. There are active and inactive species (S.V.Leontyuk 1974)

Salmonella pathogen is gram-negative, rod-shaped toxin-producing, with small, bent at the ends, short, not forming bribes and capsules, rod length 1-2 μm width 0.5 μm, one a bacterium that sometimes settles in two, A uniform turbidity occurs in the MPB, forms smooth, colorless, clear or gray-blue colonies on MPA, black colonies on bismuth-sulfite agar. (Z.J.Shapulatova 2013.)

The prevalence and course of salmonellosis and colibacillosis among large and small horned animals, fur and humans have been studied as a separate disease and vaccines have been developed for prevention. In particular, Elmuradov B.A. studied the coexistence of these diseases (pasteurellosis, colibacillosis and salmonellosis) in cattle, sheep and goats, poultry and against it “Polyvalent HOA formal vaccine against pasteurellosis, colibacillosis and salmonellosis in farm animals” was presented. (2020)

**The research purpose:** Study of the simultaneous transmission polyetiology of salmonellosis and colibacillosis, one of the mixed infectious diseases of rabbits, treatment, prevention, study of pathoanatomy, pathomorphology coverage, creation of modern disease control methods, when these diseases occur in rabbits together with the species Enterobacteriaceae, *Escherichia coli* and *Salmonella*, which belong to the same family it is expedient to study which type, in particular, which type of excitation.

**Research materials and methods:** When salmonellosis and colibacillosis of rabbits coexist, the main change is observed in the gastrointestinal tract from the digestive tract. It has been found that disease co-occurrence is most common during the rabbits transition from milk to feed.

Sleepiness in rabbits is sometimes manifested by a tremor attack, fluffy feathers.

Mortality of twelve 1.5-2-month-old rabbits from farms when examined pathologically: the main change was observed in the digestive tract and to a lesser extent in the respiratory system. The stomach is surrounded by a white mucus mass around the undigested food, catarrhal inflammation of the gastric mucosa, spotted and hemorrhagic hemorrhages in the gastric sphincters, the intestines are filled with severe gas, the stool is surrounded by a mucous mass. Foamy, yellowish-blue stools in the small intestine, the presence of a mucous fibrinous mass in the stool, foul-smelling feces, spotted on the intestinal mucosa, hemorrhagic hemorrhage and thickening of the intestinal mucosa, enlarged mesenteric lymph nodes, hemorrhagic hemorrhage, the presence of fibrin nodules of different sizes (mush, millet size) at the colon and appendix junction, depending on the disease stage, hemorrhagic hemorrhage in the lungs, the presence of foamy exudate in the trachea and spotted hemorrhages are observed. Other parenchymatous organs also have direct pathological changes, such as accumulation of yellow exudate in the heart jacket, pericarditis and left ventricular infarction, liver enlargement, dystrophic changes, loose consistency, punctate hemorrhage in the kidneys, filling the bladder with urine, redness of the anus. (Fig.1)

**Research results:**

These rabbits were transplanted from the parenchymal organs to the MPB after pathological examination and placed in a thermostat at 37°C. The characteristics of the obtained crops were studied. The culture medium in the MPB, the presence of 1 mm white sediment at the test tube
bottom, and uniform turbidity were observed. When mixed, the medium remained unchanged and easily mixed with the sedimentary medium at the solution bottom. When the ointment was prepared from the culture and stained by Gram's method and observed under a microscope, two gram-negative rod-shaped Salmonella bacteria of 0.5-2 microns in length and 1-3 E.coli in length and 0.5-0.7 microns in width were detected. (Fig. 2) White-gray S and R-shaped colonies at the inoculation MPA. (Fig. 3) From the elective nutrient media in the Endo environment, Salmonella formed bright pink-colored colonies and Eshericha coli formed darkly, dark-pink, raspberry-colored colonies. In Leven, E. coli greenish-blue, colorless glossy, transparent Salmonella colonies were formed, and in the Salmonella-Shigella nutrient medium, E.colli larvae formed purple colonies. (Fig.4) In bismuth-sulfite agar, Salmonella, black colonies, E.colli were brown, and growth was observed later (at 48 hours) than that of Salmonella. (Fig.7).

Bloody agar formed flowing colonies, which edges formed hemolysis. After isolation of pure culture under a microscope again transplanted into MPB one of the elective nutrient media was transplanted into a petri dish by diffusion of a culture agar-agar in MPB. Place in a thermostat at 37°C for 40 min. Antibiotics were placed at 2 cm intervals on the basis of a device in which special antibiotic discs were placed in a petri dish evenly distributed in the colony and kept in a thermostat for 16 hours. Out of these (gentamicin 4%, cotrimazole 25, vetillozin 50 mg, oxytetrocycline 100, brovaseptol, oxyprol, ceftioline, enrofloxacillin 50, ciprofloxacillin 30) to these antibiotics that the broader boundary is limited to a distance of 25 mm in diameter by enrofloxacillin, taking into account that cotrimazole and oxytetracycline at 22 mm distance in diameter, ceftioline limited the distance to 12 mm, gentamicin 18, brovaseptol, oxyprol, vetiloxin 16 mm apart, hypersensitivity to the antibiotic enrofloxacillin was detected, treatment with this drug was recommended. In addition, it was recommended to add 1 g of macroleprine per 10 kg of mixed feed. In addition, following the zoohygiene rules, watering cans should be washed once a week with 2% active chlorine solution, removal of moldy, rotten food, prevent the room temperature from falling below 35°C, body temperature monitoring, while keeping the rabbits body temperature in 38,5-39,5 range.

Fig.1. Pathological anatomical dissection of rabbits infected with mixed infectious salmonellosis and colibacillosis.
Fig. 2. Microscopic appearance of mixed Salmonella - E. coli pathogens.

Fig. 3. Salmonella is light pink in color, Growth colonies of E. coli pathogens in Endo medium in dark metallic glowing raspberry color.

Fig. 4: Hypersensitivity to antibiotics to enrofloxacillin

Conclusion:

1. The co-occurrence of salmonellosis and colibacillosis in rabbit cubs is a severe infectious disease that causes significant economic damage to rabbit farms. Therefore, farms should pay special attention to zoohygienic rules in the first place.

2. Salmonellosis and colibacillosis are mixed bacteriological diseases in rabbits that cause death in 65% of rabbit babies.

3. The main pathological changes in rabbits children who died from combination of salmonellosis and colibacillosis characterized by the observation of fibrinous necrotic foci on the colon and appendix border at the border and depending on the disease course.

4. For the rabbit babies treatment infected with salmonellosis and colibacillosis the use of enrofloxacillin, catrimazole, oxytetrocycline, etc. gives a high therapeutic effect.
References.


