

EFFECT OF THE DRUG Miopets® ON BODY WEIGHT AND CLINICAL AND PHYSIOLOGICAL INDICATORS OF HEALTHY PUPPIES

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Abstract

This article describes that in the treatment of dog puppies suffering from exhaustion and hypotrophy, along with antiparasitic agents and symptomatic therapy, with parenteral administration of gamma globulin at a rate of 1 ml per 1 kg of live weight, as well as with the introduction of the immunomodulator MioPets® intramuscularly: for the first time - 1 ml, repeated - after 5 days 1 ml, by the 20th day, the animals showed positive changes - improved mobility, growth and development. By the end of the experiment, the body weight of dogs in the experimental group was 4.400 ± 0.14 kg, which is on average 1600 g more than at the beginning and 700 g more than in the control group.

Keywords: hypotrophy, gamma globulin, parenteral, diarrhea, symptomatic therapy, drugs, chewing reflex, mucous membranes, intoxication, respiratory and digestive systems, nervous system, Miopets®. Актуальность темы.

Many authors (Khaziev D.D. et al., 2018; Charyev A.B. et al., 2019; Ermolova E.M. et al., 2020) note that poorly developing animals subsequently experience a decrease in productivity. In particular, the egg production of hens decreases almost twofold. In this regard, various methods are used to increase animal productivity. Among such methods, growth stimulants occupy an important place.

Stimulants, as a rule, are substances with an average degree of stimulating effect, which, due to cumulative or partially selective effects, enhance physiological processes within the normal range. Their use mainly activates anabolic processes (assimilation, synthesis), which begin to prevail over catabolic ones.

Stimulants increase the overall tone of the animal's body, activate the most important physiological systems, improve metabolism and increase energy resources for growth. Under their influence, the average daily gain in live weight increases, meat productivity increases, and feed costs per unit of production decrease.

In addition, stimulants activate internal physiological reserves inherent in every healthy organism. Currently, scientists have developed and are introducing into practice various enzyme, vitamin, antibiotic, bacterial, tissue and herbal preparations used in animal husbandry and poultry farming to accelerate growth, reduce the fattening period of all types of animals and poultry (G.A. Nozdrin, 2018).

P.P. Gizatullin (2000) suggests three-time administration of the preparation from the spleen to calves with an interval of ten days at a dose of 4 ml. E.P. Dementyev, V.B. Galliamshin et al. (2000) recommend parenteral administration of preparations prepared from the same type of tissues by implantation to stimulate the growth and development of calves.

In calves, the most intensive growth is observed at the age of 5-10 months. During this period, the weight of animals increases by 30–35%, and when using a tissue preparation prepared from bull testicles, by 40–50%. This occurs mainly due to the growth of muscle tissue, as well as partial accumulation of fat in the subcutaneous, intermuscular tissues and fat depots.

Some scientists (Gadiyev R.R., 2002; Gadiev R.R., 2004; Charyev A.B. et al., 2019; Chudinova Yu.V. et al., 2012; Farkhutdinov S.M. et al., 2013; Gadiev R.R., 2015; Charyev A.B., 2014; Mazhitov S.R. et al., 2015) based on the data obtained do not recommend the use of tissue preparations at low feeding levels. It is also emphasized that the widespread introduction of growth stimulants in poultry farming contributes to an increase in the production of poultry products.

Purpose of the study.

Taking into account the above, the purpose of this study is to determine the effect of the Miopets® immunomodulator produced in our country on the body of puppies with hypotrophy, their growth, body weight and clinical and physiological indicators.

Object and methods of research.

Experiments to study the effect of the drug Miopets® on the body of puppies with hypotrophy, their growth, body weight and clinical and physiological indicators were conducted in the vivarium of the Department of Veterinary Surgery and Obstetrics of the Samarkand State University of Veterinary Medicine, Animal Husbandry and Biotechnology.

Six puppies with hypotrophy, with an average body weight of 2.8–2.9 kg, were selected for the experiment. When making a diagnosis, a dispensary examination was carried out, as well as anamnestic data analysis regarding the conditions of feeding, housing and use of animals. The puppies were divided into two groups of 3 heads using the paired analog method. All puppies participating in the experiment were given antiparasitic drugs. Symptomatic treatment was performed in animals with diarrhea and urge to defecate. Puppies of the second (control) group were parenterally administered gamma globulin at a rate of 1 ml per 1 kg of live weight. Puppies of the first (experimental) group were also parenterally administered gamma globulin at a rate of 1 ml per 1 kg of live weight, and were additionally administered the immunomodulator Miopets® intramuscularly at a dose of 1 ml: the first time at the beginning of the experiment and again after 5 days. During the experiment, the puppies' body weight was measured, sucking and chewing reflexes, the condition of visible mucous membranes, the condition of the skin and fur, the presence of signs of intoxication, respiratory and digestive system diseases, as well as pathological changes in the functioning of the nervous system were assessed. In addition, laboratory blood tests were conducted before and during the experiment. Each group was kept separately. All animals had their body weight measured on an empty stomach on electronic scales every 10 days at the same time in the morning. Also, blood samples were taken before and during the experiment for analysis of morphological and biochemical parameters in the laboratory of the medical clinic. During the entire experiment, the animals' clinical parameters were monitored: heart rate, respiratory rate, body temperature, live weight, skin and fur condition.

Analysis of the results obtained

The puppies of the first experimental group were administered the immunomodulator Miopets® intramuscularly at a dose of 1 ml: the first time at the beginning of the experiment, the second time - 5 days later. At the beginning of the experiment, it was observed that when moving, the puppies carefully moved their paws, and when calm, they leaned on both hind limbs. Growth and development were impaired, the puppies were weak, sedentary, quickly tired even after short activity, slept most of the day, refused to play active games. Some puppies had gastrointestinal disorders: vomiting, nausea, excessive appetite, diarrhea, frequent urge to defecate. Visible mucous membranes were pale, skin elasticity was reduced, the coat was dull and disheveled. In the sacral area, pain sensitivity to pinching was reduced. Palpation revealed poor development of subcutaneous fat and decreased muscle tone. During clinical examination

the following was recorded: average body temperature — $38.9 \pm 0.25^{\circ}\text{C}$, pulse rate — 120 ± 1.30 beats per minute, respiratory rate — 16 ± 0.12 movements per minute, body weight — 2.800 ± 0.06 kg.

On the 10th day of the experiment the puppies still moved cautiously, but slight improvements in growth and development were observed. They became slightly more active, tired after short activity, slept less and began to show interest in games. Digestion began to normalize: cases of vomiting and nausea became rare, excessive appetite decreased, diarrhea was almost not observed. Visible mucous membranes remained slightly pale, skin elasticity slightly improved, the coat was still dull and tousled. Pain sensitivity in the sacral area was slightly reduced. Subcutaneous fat and muscle tone remained insufficient, but with slight improvement.

Average clinical parameters: body temperature — $39 \pm 0.24^{\circ}\text{C}$, pulse — 124 ± 1.31 beats/min, respiration — 15 ± 0.11 movements/min, body weight — 3.100 ± 0.08 kg, which is 300 g more than the initial value and corresponds to the parameters of the control group.

On the 20th day of the experiment, the puppies moved freely, confidently leaned on their hind limbs, wagged their tails when calm. Clear positive changes in growth and development were observed. The puppies became active, maintained physical activity longer without signs of fatigue, played with each other, slept less. The condition of the digestive tract improved significantly: vomiting, nausea, diarrhea and excessive appetite were not observed. The mucous membranes acquired a pinkish tint, the elasticity of the skin improved, the coat became smoother and less tousled. There was no pain sensitivity in the sacral region. Subcutaneous adipose tissue was moderately developed, muscle tone improved. Average indicators: body temperature - $38.2 \pm 0.23^{\circ}\text{C}$, pulse - 128 ± 1.32 beats/min, respiration - 16 ± 0.12 movements/min, body weight - 3.400 ± 0.11 kg, which is 600 g more than the initial and 100 g higher than in the control group.

On the 40th day of the experiment, the puppies moved freely, confidently leaned on their hind limbs, and wagged their tails when calm. Changes in growth and development became pronounced: the animals were active, did not get tired after prolonged physical activity, slept less and willingly played with each other. Digestion returned to normal, no pathologies were observed during food intake, excessive appetite and frequent urge to defecate were absent. Visible mucous membranes acquired a pinkish color, skin elasticity significantly improved, the coat became smooth and shiny. In the sacral area, there was no pain sensitivity when pinched. Palpation revealed good development of subcutaneous fat and improved muscle tone. Clinical parameters: body temperature — $38.6 \pm 0.24^{\circ}\text{C}$, pulse — 134 ± 1.33 beats/min, respiration — 15.4 ± 0.10 per min., body weight — 3.800 ± 0.12 kg, which is 1000 g more than at the beginning of the experiment and 300 g more than in the control group.

On the 60th day of the experiment, the puppies moved freely, changes in growth and development were clearly expressed. All animals were highly active, did not get tired, and

played actively. The state of the digestive system was completely normalized. Visible mucous membranes had a pinkish tint, skin elasticity was high, and the coat was smooth and shiny.

Palpation showed well-developed subcutaneous fat and increased muscle tone. Clinical parameters: body temperature - $38.4 \pm 0.23^{\circ}\text{C}$, pulse - 125 ± 1.31 beats/min, respiration - 16 ± 0.12 per min., body weight - 4.400 ± 0.14 kg, which is 1600 g more than at the beginning of the experiment and 700 g more than in the control group.

For the second control group, the puppies were not given the immunomodulator Miopets®. At the start of the experiment, the clinical signs in the puppies of the second group were similar to those in the first experimental group. When moving, the puppies carefully placed their paws, and when at rest, they leaned on both hind limbs. The development and growth of the puppies was impaired: they were weaker, less active, quickly tired when moving and showed weakness - after short-term activity, they quickly tired, slept most of the time and refused to play actively. Some puppies had digestive disorders, food intake was accompanied by vomiting, nausea, increased appetite, the desire to defecate and diarrhea. Visible mucous membranes were pale, skin elasticity decreased, the coat became dull and brittle. In the sacral area, pain sensitivity was weakened when pinched. Palpation revealed weak development of subcutaneous fat and decreased muscle tone. Clinical parameters: body temperature — $38.6 \pm 0.24^{\circ}\text{C}$, pulse — 110 ± 1.12 beats/min, respiration — 15.6 ± 0.11 per min., body weight — 2.900 ± 0.09 kg.

On the 10th day, almost no changes in growth and development were observed in the control group. The puppies were weak, quickly tired after short-term activity, slept most of the time, did not play actively. The puppies continued to have digestive problems, vomiting and nausea continued, the desire to defecate, increased appetite also persisted, and diarrhea continued. Visible mucous membranes remained pale, skin elasticity continued to decrease, the coat remained dull and brittle. Palpation also revealed poor development of subcutaneous fat and decreased muscle tone. Clinical parameters: body temperature - $38.8 \pm 0.25^{\circ}\text{C}$, pulse - 115 ± 1.13 beats/min, respiration - 16.4 ± 0.12 per min., body weight - 3.100 ± 0.10 kg, which is 200 g more than at the beginning of the experiment.

On the 20th day, the experimental group of animals moved slowly, leaning on their hind legs when standing. Minor changes in growth and development were observed. Although the puppies were somewhat less active, they were still able to move and tired only after short periods of activity, sleeping most of the day, but occasionally playing actively. The condition of the digestive tract improved, vomiting was less frequent, attempts to defecate decreased, appetite became more moderate, diarrhea and stomach upset decreased. The silkiness of the coat improved, and the color of the mucous membranes became slightly whiter. On palpation, it was noticeable that the fatty tissue had developed poorly, and muscle tone remained low. Clinical parameters: body temperature $38.6 \pm 0.24^{\circ}\text{C}$, pulse 120 ± 1.18 bpm, respiratory rate 16.6 ± 0.13 bpm, body weight 3.300 ± 0.12 kg, which is 400 g more than at the beginning of the

experiment. On the 40th day, the animals again moved freely, leaning on their hind legs and playing actively. Their growth and development improved, they became more active, did not get tired after moderate physical activity, slept most of the time, but also played actively. The condition of the digestive tract improved significantly, diarrhea and gastrointestinal disorders were no longer observed. The coat became less dull and less tangled, and the mucous membranes acquired a slightly pinkish tint. On palpation

Clinical indicators of puppies of the first experimental group.

Experiment days	Statistical indicators	Body temperature (°C)	Pulse rate (bpm)	Respiration rate (bpm)	Body weight (g)
Norms		38,3-39,2	100-160	15-40	
Before the experiment	M ± m %	38,9±0,25 100	120±1,30 100	16±0,12 100	2,800±0,06 100
Day 10 of the experiment	M ± m %	39±0,24 100,2	124±1,31 103,3	15±0,11 93,7	3,100±0,08 110,7
Day 20 of the experiment	M ± m %	38,2±0,23 98,2	128±1,32 106,6	16±0,12 100	3,400±0,11 121
Day 40 of the experiment	M ± m %	38,6±0,24 99,2	134±1,33 112	15,4±0,10 96,2	3,800±0,12 136
Day 60 of the experiment	M ± m %	38,4±0,23 98,7	125±1,31 104	16±0,12 100	4,400±0,14 157

Clinical indices of puppies of the second control group.

Experiment days	Statistical indicators	Body temperature (°C)	Pulse rate (bpm)	Respiration rate (bpm)	Body weight (g)
Norms		38,3-39,2	100-160	15-40	
Before the experiment	M ± m %	38,6±0,24 100	110±1,12 100	15,6±0,11 100	2,900±0,09 100
Day 10 of the experiment	M ± m %	38,8±0,25 100,5	115±1,13 104,5	16,4±0,12 105,1	3,100±0,10 106,8
Day 20 of the experiment	M ± m %	38,6±0,24 100	120±1,18 109	16,6±0,13 106,4	3,300±0,12 114
Day 40 of the experiment	M ± m %	39,2±0,26 101,5	121±1,19 110	15,2±0,12 97,4	3,500±0,14 121
Day 60 of the experiment	M ± m %	38,4±0,23 99,4	125±1,20 113,6	15,6±0,11 100	3,700±0,16 127

Treatment of hypotrophy in dogs using the drug Miopets® in the first experimental group:



1-drawing. 1-day of the experiment.



2-figure. 20-day of the experiment.

adipose tissue developed, muscle tone improved. Clinical indices: body temperature 39.2 ± 0.26 °C, pulse 121 ± 1.19 bpm, respiratory rate 15.2 ± 0.12 bpm, body weight 3.500 ± 0.14 kg, which is 600 g more than at the beginning of the experiment.

On the 40th day, the animals again moved freely, leaning on their hind legs and playing actively. Their growth and development improved, they became more active, did not get tired after moderate physical activity, slept most of the time, but also played actively. The condition of the digestive tract noticeably improved, diarrhea and gastrointestinal disorders were no longer observed. The coat became less dull and less tangled, and the mucous membranes acquired a slightly pinkish tint. On palpation, adipose tissue developed, muscle tone improved. Clinical parameters: body temperature 39.2 ± 0.26 °C, pulse 121 ± 1.19 bpm, respiratory rate 15.2 ± 0.12 bpm, body weight 3.500 ± 0.14 kg, which is 600 g more than at the beginning of the experiment.

On the 60th day, the animals moved freely, leaning on their hind legs, played actively, and physical activity did not cause them fatigue. Their development continued to improve, they became active and played with each other. The digestive system functioned normally, no pathologies such as constipation or appetite disorders were observed. The coat remained silkier and shinier, and the mucous membranes had a healthy color. Adipose tissue continued to develop, and muscle tone improved. Clinical parameters: body temperature 38.4 ± 0.23 °C, pulse 125 ± 1.20 beats/min, respiratory rate 15.6 ± 0.11 beats/min, body weight 3.700 ± 0.16 kg, which is 800 g more than at the beginning of the experiment.

Use of combined treatment for dogs with hypotrophy and exhaustion:

The use of symptomatic drugs and biostimulants in the treatment of dogs with hypotrophy has shown positive results. The effect of biostimulants improves the functions of the nervous system, adrenal glands, and pancreas. This leads to improved blood and lymph circulation, reduced pain, accelerated metabolism in tissues, increased muscle and ligament tone, and improved elasticity. As a result, tissue trophism is restored, and pathological foci heal.

Conclusions:

1. Treatment of dogs with hypotrophy and exhaustion: During the treatment, antiparasitic drugs, symptomatic therapy, as well as gamma globulin and the immunomodulator Miopets® were used. Gamma globulin was administered parenterally (1 ml per 1 kg of body weight), and the immunomodulator Miopets® was administered intramuscularly (1 ml, then repeated after 5 days). As a result, by the 20th day of the experiment, dogs showed significant improvements in activity, growth and development, and no vomiting was observed. Body weight increased by 1600 g compared to the initial value, which was 4.400 ± 0.14 kg, which is 700 g more than the control group.

2. When treating dogs with hypotrophy and hypothyroidism with parenteral administration of gamma globulin at a rate of 1 ml per 1 kg of body weight, simultaneously with antiparasitic drugs for puppies and symptomatic treatment, by the 30th day of life, positive changes in the growth and development of dogs were observed, they were more active, diarrhea and vomiting

were not observed. Body weight at the end of the experiment was 3700 ± 0.16 kg, that is, it was increased by 800 g compared to the beginning of the experiment.

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