

## Effect of Some Biostimulants Used In Rabbit Breeding on Blood Hematological Indicators

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Rabbit farming is a promising branch of animal husbandry. Rabbits are distinguished by high fertility and growth energy. With proper feeding and maintenance, from each full-fledged female rabbit with 5-6 litters per year, you can get more than 30 rabbits, and after weaning - about 60-70 kg of meat, a significant amount of skins, fluff and leather (L. P. Prakhov, 1991).

Rabbit meat belongs to the so-called white meat, has a soft, fine-grained structure, pale pink in color. It is moderately layered with fat and differs from other types of meat in its higher content of complete and lower content of incomplete proteins. Thanks to these qualities, it is easily digested and is 90% absorbed by the human body, while beef protein is only 62%. Due to its high digestibility, protein value, and lower sodium content, it is recommended for diseases of the liver and gall bladder (A. T. Erin, V. G. Plotnikov, 1994; V. N. Sysoev, V. N. Aleksandrov, 1985).

Rabbits are also a cheap source of fur, leather and fluff. The importance of rabbit breeding in our country is great as a reserve for increasing raw materials for light industry.

Rabbit skin is suitable for making light and beautiful shoes and various leather goods. Especially valuable varieties of velor, as well as knitwear, are produced from rabbit fluff.

Rabbits are irreplaceable laboratory animals. Currently, domestic and foreign companies provide a wide selection of medicines. Requirements for their quality, viral safety and biological usefulness are constantly increasing. Therefore, it is important to study the physiological and biochemical parameters of rabbits as objects for drug testing (T.V. Korotkova, V.V. Anastasiev, O.V. Korochkina et al., 2002).

In modern Russia, agriculture is going through difficult times. The transition to a market economy had a negative impact on the state of a number of industries. This problem has not escaped rabbit breeding either: the number of farms specializing in rabbit breeding has decreased, which has led to a reduction in the number of livestock. Today, the most important task is to preserve the valuable gene pool created by Soviet breeders and the transition to economically profitable farming.

Feed takes up most of the costs in the production of rabbit products, which is a limiting factor in its development. Reducing feed costs is the key to successful farming.

Of particular relevance is the development of optimal diets for feeding animals, since this is the most responsible link in the formation of healthy, constitutionally strong young animals (E.A. Vagin, R.P., Tsvetkova, 1981; H. Niehaus, 1965; W. Schielke, 1965; L.G. Utkin, V.S. Andreeva, 1972; V.V. Merkushev, 1966; E.A. Razorenova, 1975; K.N. Morozova, 1975; S.N. Khokhrin, 2002; Yu A. Kalugin, 1985).

Rabbit breeding in our country has experienced several ups and downs, which to some extent can be explained, first of all, by the lack of proper veterinary support (V.G. Plotnikov, 2005).

Currently, there has been an increase in rabbit breeding, as prices for its products have increased significantly, which indicates that people are interested not only in dietary meat, but also in valuable skins and fluff, which are light and have the ability to retain heat well.

The main costs for the production of rabbit meat are associated with the cost of feed, the share of which in the cost of production reaches 57-80% (L.G. Utkin, V.S. Andreeva, V.N. Pomytko, 1984, R.C. Corregal, 1983, R. Henaff et al. , 1987). Since the rabbit is a herbivore, green and roughage occupy a significant proportion of its diet. However, without concentrates it is impossible to achieve high productivity, so their share in finished feed reaches 60-70%.

The widespread use of granulated feeds containing 30-40% expensive grass meal in feeding rabbits makes it necessary to look for cheaper sources of fiber in rabbit feeds. As such, straw flour and sawdust were studied in the composition of granulated feed and the addition of hay, grass and straw briquettes, as well as pine needles to granulated feed.

In connection with the dry type of feeding granulated feed to rabbits, it became necessary to establish the rabbits' need for water per unit of dry matter of feed and to determine the palatability of feed by rabbits in different physiological states.

Despite the fact that the rabbit has long been an object of biological research, the physiology of its digestion remains poorly understood to this day, especially the phenomenon of coprophagy or eating its own feces. In addition, in the anatomy and physiology of the digestive organs of rabbits there are many contradictory indicators that require clarification.

In connection with the above, it became necessary to understand some of the peculiarities of rabbit digestion, consumption of feed dry matter, metabolic energy and water.

Based on data on feed palatability, new standards for the energy and dry matter requirements of rabbits have been developed, depending on productivity. A regression equation has been proposed for calculating the metabolic energy in the dry matter of the diet based on its digestibility coefficient, which is available even in farm conditions.

The new data obtained on the physiology of digestion in rabbits contribute to the particular physiology of herbivores, to the comparative physiology of animals, and can be used in the educational process in the training of both livestock specialists and general biologists. The recommended conditions for watering rabbits in winter help to save a significant amount of feed and can be used in the preparation of new industry standards for technological design.

Vagin E. A., Tsvetkova R. P. (1981) note that according to the zoological classification, rabbits (*Oryctolagus cuniculus*) belong to the order Lagomorpha, the family Leporidae, the genus of burrowing hares (*Oryctolagus*) and the species of common rabbits. The genus of rabbits is divided into two species: the common rabbit and the fat-tailed rabbit. All breeds of domestic rabbits are classified as the common rabbit. The homeland of the common rabbit has not been precisely established. It is believed that the first wild rabbits of this species appeared many thousands of years ago in countries adjacent to the Mediterranean Sea.

Wild rabbits are relatively small animals. Their body length does not exceed 40 cm, and their weight is 2-3 kg. Wild rabbits began to be tamed and bred at home for meat. They were first domesticated by humans more than 2 thousand years ago. At first they were bred only in southern countries with a warm and mild climate. In the Middle Ages, they began to be bred in almost all countries of Western Europe, and since the beginning of the last century they have been bred in almost all countries of the world. Domestic rabbits appeared in Russia in the 11th century.

According to Aleksandrov V.N. and Kladovshchikov V.F. (1999), about 60 breeds of rabbits are currently known in various countries of the world. Rabbits of different breeds differ in color, hair structure, size and build.

Mineev B.I., Parillo L.E. et al. (1983) noted that according to the nature of the products

obtained, breeds are divided into meat - skin, down and meat. Meat-skinned breeds include: Soviet chinchilla, white giant, gray giant, silver, black-brown, Vienna blue, Russian ermine, Soviet marder, butterfly. Meat breeds include New Zealand white and Californian. A representative of the downy breeds is the white downy breed. The main advantage of the breed is its high down production (up to 1 kg per female with offspring per year). The average length of the down is 5 cm.

According to Baksheev P.D., Naimitenko E.P. (1980), knowledge of the biology and physiology of rabbits is of great importance for the proper organization of rabbit meat production in the country.

The most important biological features that are of economic importance are early maturity, high fertility and high reproduction intensity, intensive growth and development, high feed costs, and good acclimatization abilities.

Features of digestion. According to Vagin E. A., Tsvetkova R. P. (1981), rabbits are herbivorous animals with a simple stomach. They are born with 16 baby teeth, which are replaced by permanent teeth by the age of one month. Like all rodents, they do not have fangs. At one month of age, rabbits have 28 or 26 teeth.

The rabbit's stomach is single-chamber, esophageal-intestinal type, relatively large. Its capacity when filled is 180-200 ml in adult animals. One of the biological features of rabbits is that there are practically no muscles in the stomach. The total length of the intestines in rabbits is 8-10 times the length of the body, so low-quality food immediately leads to death. The peculiarity of the structure of the digestive tract is that rabbits, unlike other farm animals, have a very large cecum, which is 7-10 times larger than the volume of the stomach. It contains a huge number of cellulolytic bacteria, under the influence of which fiber is broken down.

With free access to food, the frequency of eating in adult rabbits is on average 25-30 times a day, with the duration of eating 5-10 minutes. Young animals eat food more often. Gastric juice in rabbits is highly acidic and highly digestible. It is separated continuously throughout the day, even during periods when the rabbit does not receive food. However, this release is uneven, and more abundant in the daytime.



On average, food stays in a rabbit's stomach from 3 to 10 hours, and passes through the entire gastrointestinal tract within 3 days.

One of the biological features of rabbits is that they are characterized by so-called coprophagy. Blount W. R. (1957) reports the following about the phenomenon of coprophagia. Rabbits eat feces of a special composition, very different from the normal fraction, in particular, in consistency. Soft feces are rich in B complex vitamins, nitrogenous substances, and amino acids. The formation of this feces usually occurs 6 hours after the last meal. Coprophagia helps supply the body with vitamins and maintain the digestion process by participating in the transport of stomach contents to the intestines.

There is another widespread belief that, thanks to coprophagy, that is, the repeated passage of food masses through the digestive tract, rabbits can absorb crude fiber well. Thacker E. J. and Brandt S. S. (1957) note, however, that when given a diet rich in crude fiber, the feces eaten had no effect on the digestion of fiber or other carbohydrates.

The positive effect of coprophagy appears to be better utilization of protein, as established by Huang T. S., Ulrich N. E., McSau S. M. (1947).

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