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Use Of Montmorillonite Bentonite Group Minerals for Balanced Mineral Nutrition.

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Annotation: Bentonite is a biologically active substance, adding it to feed and fertilizers to the soil increases the productivity of animals and the yield of agricultural crops.

The main component of bentonite is montmorillonite. Bentonite clay is widely used in the medical and industrial fields. Being a source of irrigation microelements, bentonite is used for the manufacture of various dietary supplements and vitamins, it has a good effect on the functioning of the gastrointestinal tract, has a more soothing and anti-inflammatory effect. It is used as a dietary supplement for the prevention and treatment of aflotoxin toxicity. Bentonite is a reliable food supplement for metal poisoning. Montmorillonite crystals have fat-absorbing properties, it has antibacterial properties. Bentonite adsorbs and releases a strong toxic substance - gossypol. Preparations based on bentonites have the properties of an ion exchange adsorbent and a catalyst,

Keywords: Clay, montmorillonite, trace element, detoxification, adsorbent, fat-absorbing properties, wound healing, healing material, fertility, digestion coefficient, gossypol, pigmentation, collagenosis, osteoporosis, osteoarthrosis, kaolenite, zeolite, vermiculite, resistance.

Bentonites are called, regardless of their origin, finely dispersed clays, consisting of at least 50 - 80% of minerals of the montmorillonite or beidellite group, which have a high binding capacity, absorption and catalytic activity.

Bentonite is a biologically active substance, adding it to feed and fertilizers to the soil increases animal productivity and agricultural productivity. cultures. The main component of bentonite is montmorillonite, which after modification is used in the oil and gas, food, cosmetic, pharmacological and construction industries. Bentonite owes its name to Benton County in the United States. where the first deposits of this clay were found. Its formation took place over many millions of years, at the bottom of the prehistoric ocean, from volcanic ash. Bentonite has a number of unique qualities, and all thanks to the high content of montmorillonite. The first is that the particles of this material have an excess negative charge. Secondly, bentonite has a layered structure, which allows it to be used in many areas of activity. Such clay perfectly absorbs moisture, while increasing many times in volume. The quality indicators include plasticity (in connection with liquid) acquires a plastic mass and takes any shape at low pressure), sorption (absorbs ion molecules from the medium and holds them on its surface); resistance to fire; sintering (when a solid, durable body is also formed during firing). Since ancient times, people have used clay both externally and internally.

Purpose of the study: In order to balance mineral nutrition, the use of bentonite from the Azkamar deposit was studied. Its physical and chemical properties were studied.

Materials and methods of research: Bentonite has a large surface area which is made up of very small negatively contaminated particles. These particles are ideal for attracting positively charged dirt and toxins to the surface of the skin. The larger the surface area of the clay, the greater the power to collect positively charged particles and toxins. Colloidal particles are stimulation and transformation agents capable of retaining and releasing energy upon impulse.

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Bentonite paste (2 parts water to 1 part bentonite) can be applied to bee and mosquito stings, cuts and pimples. Bentonite tightens the skin and can also be used for scratches and bruises. Bentonite has a healing ability and has a wide spectrum of action, so it is a valuable healing and curative material.

When feeding farm animals, the use of minerals increases their fertility. Bentonite is part of these substances, it has valuable specific properties that allow them to be used in animal husbandry. When adding bentonite to the diet of farm animals and birds or using them in the preparation of silage and haylage, they give positive results. Firstly, bentonite accelerates the metabolic process in the body of animals and increases the digestion rate. Secondly, bentonite enriches the body. Thirdly, bentonite forms a complex compound with a very strong poisonous substance, gossypol, which is found in the feed of the meal and in the husk, adsorbs them and brings them out. In addition, bentonite removes alkaloids from the body of animals, which are present in the fodder plants of the genus hirzitum. Gossypol is a chemical that forms a hydrophobic ionic compound. It is light yellow in color and occurs in seven crystalline forms. Gossypol has a cumulative property and is a poison of the nervous system of the cardiovascular system and cells. Youngsters are more sensitive to it. The degree of poisoning, its clinical signs depend on the amount ingested. With excessive receipt of gossypol together with food, hemorrhagic diathesis and paralysis are observed in animals, with prolonged use of it, diarrhea, conjunctivitis, keratitis, synovitis, and cohixen are observed. Availability Gossypol has a cumulative property and is a poison of the nervous system of the cardiovascular system and cells. Youngsters are more sensitive to it. The degree of poisoning, its clinical signs depend on the amount ingested. With excessive receipt of gossypol together with food, hemorrhagic diathesis and paralysis are observed in animals, with prolonged use of it, diarrhea, conjunctivitis, keratitis, synovitis, and cohixen are observed. Availability Gossypol has a cumulative property and is a poison of the nervous system of the cardiovascular system and cells. Youngsters are more sensitive to it. The degree of poisoning, its clinical signs depend on the amount ingested. With excessive receipt of gossypol together with food, hemorrhagic diathesis and paralysis are observed in animals, with prolonged use of it, diarrhea, conjunctivitis, keratitis, synovitis, and cohixen are observed. Availability synovitis, cohixen. Availability synovitis, cohixen. Availabilitygossypolais determined by a saturated solution by NMR-, EPM-spectroscopy by a luminescent method (on an ISG-51 spectrograph). When exposed to montmorillonite solution, the solution turns green, which indicates the presence of two charged gossypol anions. The content of microelements was determined by the methods of emission and atomic absorption spectral analysis, the content of the finely dispersed fraction was determined by the sedimentation method.

Results and their discussion: At present, the vital necessity of all 11 trace elements has been proven, so the presence in the feed of small amounts of vanadium, chromium, lead, nickel, arsenic and tin is also necessary, as well as the "classic" trace elements - manganese, cobalt, nickel, zinc, copper and molybdenum. .The most favorable set and ratio of microelements is possessed by bentonite of the Azkamar deposit, in which there is more manganese, cobalt, copper in a ratio of 10:1. What is considered good for the body.

This means that bentonite has the ability to absorb large amounts of contaminated (cations and anions) gossypol. This will allow the use of bentonite as an adsorbent in the neutralization of gossypol in the composition of pet food. In animals that have consumed low-quality silage in the stomach, the walls of the stomach are destroyed due to the acidic environment. Bentonite has the ability to absorb acid and normalize the environment.

When bentonite is added to the feed, the activity of microorganisms that form fatty acid decreases and the activity of microorganisms that form lactic acid accelerates. They enrich the feed with microelements. The fertility of livestock is reduced by 15-20%. The productivity of milk in cows increases per day by 17-22%. Adding bentonite to pet food can prevent about 30 animal diseases. The main condition for the successful development of animal husbandry and increasing the productivity of farm animals is their full feeding, in which animals are provided with all the nutrients, minerals and biologically active substances in accordance with their needs. Complete feeding contributes to an efficient metabolism, while guaranteeing the production of consistently high quality products with minimal feed costs. From the usefulness of the diet depends on the productivity of animals and their health. Biologically active substances available in feed (vitamins, enzymes,

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trace elements, hormone-like substances) are needed to maintain metabolic processes in the feed and to regulate them.

Astrakhan is distinguished by the richness of the pattern and an amazing variety of colors, which are different among fur-bearing animals, even minks. Karakul breeding is practically the only industry that allows year-round use of scarce desert pastures with economic benefits. Trace elements are divided into two groups, that is, those that affect pigmentation and elements that directly affect these properties, which gives an answer to practitioners in improving the color of astrakhan fur and resolves the issue of feeding sheep with certain elements. Trace elements have remained a mystery until recently due to the lack of appropriate methods of analysis. The importance of metal complexes with wool ligands for its color, luster and quality of karakul curls was established. Complete mineral nutrition of farm animals is a necessary condition for their high productivity and pain prevention of 30 types of non-communicable diseases, which include collogenosis, osteoporosis and osteoarthritis, breakage of the Achilles tendon, paraneratosis. endemic ataxia (burang) which have a significant distribution. brilliance and quality of karakul curls Complete mineral nutrition of farm animals is a necessary condition for their high productivity and prevention of pain of 30 types of non-communicable diseases, which include collogenosis, osteoporosis and osteoarthritis, breakage of the Achilles tendon, paraneratosis. endemic ataxia (burang) which have a significant distribution. brilliance and quality of karakul curls Complete mineral nutrition of farm animals is a necessary condition for their high productivity and prevention of pain of 30 types of non-communicable diseases, which include collogenosis, osteoporosis and osteoarthritis, breakage of the Achilles tendon, paraneratosis. endemic ataxia (burang) which have a significant distribution.

With manganese deficiencies, the process of connective tissue biosynthesis decreases and its deficiency in the body of animals can serve as one of the reasons for the damage to the musculoskeletal system to prevent the observed pathologies, bentonite clay is added to animal feed. The high content of sodium contributes to its ion exchange in the digestive tract for calcium and potassium, thereby balancing the mineral composition of the chyme and increasing the availability of trace elements for the animal body. Bentonite was also effective in preventing gossypol poisoning when fattening animals with cottonseed meal. The inclusion of bentonite in the diet of cows on dairy farms helped to increase their milk productivity by 6-10%, normalize the activity of the gastrointestinal tract and also contributed to better growth and development of Karakul young animals. Particular attention due to its environmental friendliness and low cost. deserve preparations from the group of natural clay minerals. Small amounts of illite, kaolinite, zeolite, vermiculite and other minerals are present in bentonites. Bentonite clays are enriched with salts of alkali and alkaline earth metals and include a large set of macro and microelements vital for the body: Cu, Zn, Mn, Co, Ag, Ca, Mg, Cr, J, Fe, etc. By exchanging cations, bengonite contributes to the regulation of the level of calcium, sodium, iron, etc. Preparations based on bentonites have the properties of an adsorbent, ion exchange and catalyst, replenish substances that are bioavailable to the body, contribute to the normalization of general and especially mineral metabolism, improve digestibility and rational use of nutritional components,

There is less vanadium and chromium in this clay than in the clays of the other two deposits, lead is 4 times less. Light green (gray) bentonite of the Azkamar deposit bears clear traces of volcanic origin, contains 31% water and 73% finely dispersed colloidal fraction of montmorillonite.

Another feature of the Azkamar bentonites is their alkaline character - the predominance of magnesium among the exchange cations of sodium and in the "hydrargillite" structure, which allows them to be attributed to the magnesium-sodium type, while the most well-studied (reference) bentonite - gumbrine - is dominated by calcium ions.

The predominance of sodium among the exchange cations of Azkamar montmorillonite is of a certain value, especially in the conditions of Uzbekistan, food is enriched with calcium, which inhibits the absorption of phosphorus and a number of trace elements. And in particular, copper, manganese, zinc.

The chemical transformations of bentonite during digestion have been studied by comparing its composition before and after passage through the digestive tract. When passing through the digestive tract, bentonite is 2 times enriched with potassium, 5-6 times with calcium and magnesium, while maintaining the same level of sodium. At the same time, there is a significant enrichment in copper (5.2 times), manganese (6.2 times) and especially zinc (16 times). Since 130 g of bentonite is excreted per day with feces, 513 g of

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potassium, 158.6 g of calcium and 319.2 g of magnesium, 8.7 mg are removed from the body with it. Copper, 97.5 g of zinc and 57.8 g of manganese, which is 50% of the total amount of elements present in food.

Conclusion: Bentonite clays are widely used in the medical and industrial fields. Being a source of useful trace elements, bentonite is used for the manufacture of various dietary supplements and vitamins. In addition, clay has a good effect on the functioning of the gastrointestinal tract, perfectly restores the alkaline balance in the human body, and has an analgesic effect and diseases caused by a high fat content in the diet. In addition, bentonite helps skin wounds and ulcers heal faster. Recently, the number of antibiotic-resistant bacteria has increased.

Many synthetic antibiotics are simply no longer effective. Bentonite has antibacterial properties. Montmorillonite is effective against polyphage and E. coli. When wetted with water, it kills a wide range of bacteria.

Bentonite is a biologically active substance, adding it to feed and fertilizers to the soil increases the productivity of animals and the yield of agricultural crops. Being a source of useful trace elements, bentonite is used for the manufacture of various dietary supplements and vitamins. In addition, clay has a good effect on the functioning of the gastrointestinal tract, perfectly restores the alkaline balance, and has an analgesic and anti-inflammatory effect. Clay molecules are too large to pass through the intestinal wall, so heavy metals and other toxins are not absorbed by the body. Concrete can bind aflatoxins when added to food, eliminate their toxicity Bentonite paste is applied to bee and mosquito stings, cuts, acne.

When feeding farm animals, the use of minerals increases their fertility. Bentonite forms a complex compound with a very strong toxic substance gossypol, which is part of bentonites, has the properties of an adsorbent, ion exchange and catalyst, replenishes bioavailable substances for the body, contributes to the normalization of general and especially mineral metabolism, improves digestibility and rational use of nutritional components, creates the necessary conditions for increasing general resistance of the organism.

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