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VITAMINS A, D, E AND K IN CALVES AND THEIR EFFECTS ON THE BODY

Associate Professor: N. Farmonov 1
Senior Teacher: J. E. Rejepbayev 2
Student: S. K. Tajimova 3
Department of "Veterinary Medicine and Pharmacology",
Nukus branch of Samarkand State University of Veterinary Medicine,
Animal Husbandry and Biotechnology Candidate of Veterinary Sciences,

Abstract
This article discusses the most common vitamin deficiencies in calves and their impact on health. Vitamins play a crucial role in maintaining calf health. Deficiencies in vitamins A, D, E, and K can cause growth and development problems in calves. The article also includes helpful tips on what to do to prevent these vitamin deficiencies.

Keywords: Calf, vitamin deficiency, vitamins A, D, E, K, health, effects of nutrients.

Introduction

Proper nutrition is essential for the healthy development of calves. The diet should contain sufficient amounts of vitamins and minerals. However, in some cases, calves may lack some of the vitamins they need, which can negatively affect their health. The vitamins that calves often lack are essential nutrients such as vitamins A, D, E, and K. This article provides detailed information about the vitamins that calves lack and their health effects.

To ensure the health of a calf, its diet must contain the necessary vitamins. Vitamins not only contribute to the overall development of the body, but also to the effective functioning of its immune system, growth, and metabolism. However, if some vitamins are not taken on time or in sufficient quantities, their deficiency in calves may be noticeable. Below we will provide information about the most common vitamin deficiencies and their effects on health.

Vitamin A is an important part of growth and development in calves. This vitamin is essential for the body's vision, immune system, and skin health. Vitamin A deficiency in calves can often be associated with vision problems, skin diseases, and a weakened immune system. In this case, the animal's body does not produce enough new cells and tissues, which hinders its growth.

Vitamin A deficiency is a chronic disease characterized by impaired branching and metaplasia of epithelial cells, deterioration of vision, reproductive characteristics, and stunting of young animals. Endogenous A deficiency can be observed in hepatitis, cirrhosis of the liver, gastroenteritis, infectious and parasitic diseases, and chronic poisoning. Tocopherol and some antioxidants, as well as zinc, are substances that protect vitamin A from degradation. Calves begin to be fed high-quality hay, green grass, and chopped grass from the age of 2-3 weeks. Antioxidants (diludin, etc.) are used to protect retinol contained in feeds from degradation.

Vitamin D improves the absorption of calcium and phosphorus in calves, while ensuring the

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strength of bones and teeth. Vitamin D deficiency can lead to weak bones and rickets. In most cases, the lack of this vitamin in the calf's body is due to a lack of exposure to sunlight. Therefore, vitamin D supplements are important in improving the health of calves.

The most important vitamins of group D in calves are vitamins D2 and D3. Vitamin D2 (ergocalciferol) is abundant in the roughage of the livestock diet (hay and silage), while vitamin D3 (cholecalciferol) is produced in the skin under the influence of sunlight and is also given as a supplement.

In this case, the bone substance prevails over the mineral part of the bones. Calves up to one year old are mainly affected. Vitamins D2 and D3 are considered anti-rachitic vitamins, which ensure the metabolism of phosphorus and calcium. Vitamin D3 (cholecalciferol) is synthesized from 7-dehydrocholesterol under the influence of ultraviolet rays. Therefore, in winter, vitamin D2 (ergocalciferol) in food cannot sufficiently satisfy the vitamin needs of animals. Cow's milk contains 100-200 IU/kg, and milk contains 10-50 IU/kg of vitamin D. With a sufficient amount of calcium and phosphorus in the diet, 4-10 IU of vitamin D per kilogram of body weight prevents calves from developing rickets.

Vitamin E is known as a powerful antioxidant, protecting the body's cells from oxidation. Vitamin E deficiency in calves can lead to muscle weakness, blood vessel and heart problems. This vitamin is also very important for the animal's heart and nervous system.

Vitamin E is not synthesized in the body of calves, it is synthesized from food and fatty preparations. Vitamin E protects fats from oxidation, from the destruction of vitamins A (retinol), D3 (ergocalciferol) and carotene, and participates in their long-term accumulation in the body. In the body of animals, vitamin E ensures the synthesis of vitamins A and D. Vitamin E has the property of passing through the intestinal walls, being adsorbed into adipose tissue and accumulating in the body in reserve.

Vitamin K plays an important role in blood clotting. It helps the body stop bleeding. Vitamin K deficiency in calves can lead to problems with preventing bleeding if the blood clotting process is impaired. Vitamin K is also important for bones because it activates proteins in the bone, such as osteocalcin, which helps keep bones and teeth strong. Vitamin K deficiency can lead to weak bones and fractures. Since bones are developing rapidly in calves, vitamin K plays an important role. Vitamin K, especially Vitamin K2 (menaquinone), is important in maintaining calcium saturation in bones. It prevents calcium from accumulating in arteries and other soft tissues, which supports heart and blood vessel health.

Conclusion

Vitamins play an important role in the healthy development of calves. Deficiencies in vitamins such as vitamins A, D, E, and K can cause growth and development problems in calves. To prevent these vitamin deficiencies, it is necessary to properly organize the diet and regularly provide vitamin supplements by veterinary specialists. It is also necessary to improve the nutritional diet of the animals and provide them with various vitamins, depending on their needs. Then the health and growth process of the calves will be effective.

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